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HIV/STI ASSOCIATED RISK BEHAVIORS AMONG SELF-IDENTIFIED LESBIAN, GAY, BISEXUAL, AND TRANSGENDER COLLEGE STUDENTS IN THE UNITED STATES

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An Internet survey was conducted during the 2001-2002 academic year to examine the health risk behaviors, including HIV/STI associated behaviors, of self-identified lesbian, gay, bisexual, and transgender (LGBT) college students in the United States. A total of 450 LGBT college students completed the entire on-line survey. Most respondents attended a 4-year (96.9%), coeducational (98.6%), non-religiously affiliated (87.5%), public (68.6%) institution. Eighty-nine percent reported having sex with someone of the same sex and 45% had multiple (6 or more) sex partners during their lifetime. Most reported using a condom consistently during penile-vaginal (61%) and anal sex (63%). However, only 4% used a condom or other barrier consistently during oral sex and 28% used a condom or other barrier during their last sexual encounter. Injection drug use and needle-sharing behavior was low (2.1% and 1.1%, respectively). Comparisons with heterosexual college students' HIV/STI associated risk behaviors are included. Results may be useful for HIV/STI prevention programs targeting LGBT college students.

Ever since the beginning of the HIV/AIDS epidemic, a significant proportion of cases in the United States have been reported among men who have sex with men (MSM) (Centers for Disease Control and Prevention [CDC], 1981, 2003a). According to the most recent *HIV/AIDS Surveillance Report*, 43% of the cumulative total of male adult/adolescent HIV infection cases in the United States were reported among MSM and another 6% among MSM who also reported injection drug use (IDU) (CDC,

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Funding for this research was provided by Western Kentucky University, Graduate Studies and Research, Junior Faculty Scholarship Program. The authors are grateful to members of the national advisory committee for assisting with the design and development of the survey instrument: Dr. Emilia Lombardi, Billy Oglesby, Dr. J. Davidson "Dusty" Porter, Dr. Belinda Reininger, Dr. Stephen T. Russell, Caitlyn Ryan, Dr. Ronni Sanlo, and Bob Ward. The authors would also like to thank Michael Brockman for his invaluable service in writing the Perl script for data collection.

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2003b). Perhaps more disturbing is the prediction of a "second wave of HIV infection among MSM," especially young MSM, as reports of newly diagnosed cases of HIV among this population increased by 14% between 1999 and 2001 (CDC, 2003a; Gross, 2003). Moreover, data from syphilis surveillance, the Gonococcal Isolate Surveillance Project (GISP), and several U.S. cities indicated that increasing numbers of MSM are acquiring sexually transmitted infections (STIs) (CDC, 2002).

With regard to HIV/STIs among lesbian, bisexual, and/or transgender populations in the United States fewer studies have been conducted. However, based on the research that has been conducted, all of these populations are considered to be at higher risk for HIV/STI than the general population (Clements-Nolle, Marx, Guzman, & Katz, 2001; Diamant, Lever & Schuster, 2000; Dolan & Davis, 2003; Einhorn & Polgar, 1994; Hollander, 1996; Kenagy, 2002; Lampon, 1995; Lombardi, 2001; Myer, 2001; Nemoto, Luke, Mamo, Ching, & Patria, 1999; Morrow & Allsworth, 2000; Norman & Perry, 1996; Young et al., 2000). In particular, women who have sex with women (WSW) who also use injection drugs, have higher levels of HIV-related risk behavior and higher rates of HIV seroconversion or seroprevalence than other women who report IDU (Lemp et al., 1995; Young et al., 2000). Significant proportions of self-identified lesbians and bisexual women have also reported engaging in high-risk sexual behaviors, including unprotected sex with gay/bisexual men (Diamant et al., 2000; Dolan & Davis, 2003; Einhorn & Polgar, 1994; Hollander, 1996; Lampon, 1995; Lemp et al., 1995; Morrow & Allsworth, 2000; Norman, 1996). Despite participation in different high-risk behaviors and knowledge of documented cases of HIV transmission between women, many lesbians and bisexual women still possess a false sense of security or "immunity" to HIV (Einhorn & Polgar, 1994; Goldstein, 1995; Norman & Perry, 1996; Richardson, 2000; Stevens, 1994, 2001).

According to the Institute of Medicine, between one-half and two thirds of all new cases of STIs/HIV in the United States occur among young people under the age of 25 years (Eng & Butler, 1997). Of particular concern is the risk of HIV/STI transmission among lesbian, gay, bisexual, and/or transgender (LGBT) youth/young adults. To date, most of the research studying health and/or HIV/STI associated risk behaviors among LGBT youth/young adults have been primarily of high school-aged LGBT students through participation in the CDC's Youth Risk Behavior Surveillance or LGBT support groups (D'Augelli & Hershberger, 1993; Faulkner & Cranston, 1998; Garofalo, Wolf, Kessel, Palfrey & DuRant, 1998; Uribe & Harbeck, 1991; Wright, 1998) or of convenience samples of LGBT young adults participating in community-based LGBT organizations, at gay bars and/or music festivals (Kelly & Murphy, 1997; Makulowich, 1997; Stevens, 1994, 2001). Few studies have examined the health risk behaviors, including HIV/STI associated behaviors of LGBT college students exclusively (D'Augelli, 1992; Thompson, Kent, Thomas, Vrugos, 1999).

The first comprehensive survey to examine the health risk behaviors of college students in the United States was the National College Health Risk Behavior Survey (NCHRBS), conducted by the CDC in 1995. More than 4,600 college students nationwide (aged 18 years and older) completed the NCHRBS, which measured six areas of health risk behaviors: unintentional and intentional injuries, tobacco use, alcohol and other drug use, sexual behaviors, dietary behaviors, and physical activity (CDC, 1997). Risk behaviors associated with the transmission of HIV/STIs measured by the NCHRBS included college students' participation in sexual intercourse (lifetime and 3

months preceding the survey), age of initiation of sexual intercourse, number of sex partners (lifetime and past 3 months), condom use, IDU, and HIV antibody testing.

Using items from the NCHRBS, the National Lesbian, Gay, Bisexual and Transgender College Student Survey was conducted during the 2001-2002 academic year to examine the health risk behaviors, including HIV/STI risk behaviors, and developmental assets of self-identified LGBT college students in the United States. The National LGBT College Student Survey was the first online survey designed to examine the health of these students on a national level.

METHODS

This investigation utilized a cross-sectional survey design to measure health risk behaviors and developmental assets of LGBT college students in the United States. The survey instrument was divided into four separate sections and contained a total of 275 items. The first section of the survey (31 items) collected demographic information regarding LGBT college students' age, biological sex at birth, race/ethnicity, year in school, residence, sexual orientation, gender identity/presentation, relationship status, and college/university information. The second section (131 items) measured respondents' external assets including the quality of their relationships with parents, friends, classmates, teachers, and other adults; the health and safety of their home, college and neighborhood environments; and participation in a variety of college and community activities.

The fourth section (29 items) of the survey measured respondent's internal assets. Commitment to learning, positive values, social competencies, and self-identity are examples of internal assets measured in this section. Items from sections two and four (external and internal assets, respectively) were taken from Search Institute's Profiles of Student Life: Attitudes and Behaviors survey (Leffert et al., 1998). However, this survey was originally constructed for and used to measure assets among middle and high school students. Thus, items were modified in order to be appropriate for college students.

The third section of the survey (84 items) measured the health risk behaviors of self-identified LGBT college students. Numerous items from the CDC's 1995 NCHRBS were used to measure behaviors from all six of the aforementioned risk areas. With regard to behaviors associated with HIV/STI transmission, the following (with corresponding α reliability coefficients) were examined: (a) age of initiation of opposite and same sex sexual behavior ($\alpha = .7932$); (b) number of sex partners (male and female) during their lifetime ($\alpha = .7495$) and past 3 months ($\alpha = .7020$); (c) types of sexual behaviors in which students ever engaged (lifetime) ($\alpha = .7313$); (d) Frequency of condom and/or other barrier use during oral, anal and vaginal sex ($\alpha = .7268$); and (e) IDU and needle sharing for IDU (lifetime) ($\alpha = .8486$). In addition, LGBT college students were asked how frequently they used alcohol and/or other drugs prior to sex, if they had ever been tested for HIV during their lifetime, with which (if any) STIs they had ever been diagnosed during their lifetime, if they had a body piercing, and where the piercing was located on their body.

To maximize accessibility of the survey and participation among LGBT college students, the researchers decided to place the questionnaire online. The questionnaire was written in HTML (HyperText Markup Language), and Perl script was used to process survey responses, which were housed as a tab delimited text file using a cgi-bin. The text files were then pulled into an SPSS data file for analysis. The research-

ers purchased a domain (<http://www.lgbt-css.org>) to host the Web site on which the survey appeared.

Prior to conducting the online survey, an eight-member national advisory committee was formed to provide input and recommendations on the content of the survey instrument. Sexuality and LGBT researchers from across the country and individuals representing different national health and LGBT organizations were paid a small stipend to review the instrument for clarity, relevance, and bias. Members of the advisory committee were specifically selected because of their expertise working with LGBT youth, LGBT college students, and/or assessing individual and/or community assets. The knowledge, experience, and diversity of viewpoints of the advisory committee members assisted in strengthening the content validity of the survey instrument.

The online survey instrument was pilot tested with students from the Diversity Coalition, which is Western Kentucky University's LGBT student organization, and by the national advisory committee. The researchers obtained feedback regarding the functionality of the survey's Web site and content of individual items/questions from students through small group discussions and from advisory committee members through email and telephone correspondence. Overall, the survey was well received and only a few adjustments were made to the content and formatting before the investigation officially commenced.

Informational packets containing a letter of invitation to participate in the survey, flyers with the study's description, and postcards containing the survey's website address were mailed to 135 LGBT college student organizations and resource centers across the country in early October 2001. Faculty advisers and student officers were asked to post flyers, distribute postcards, create a link to the survey from their organization's Web site, and encourage student participation in the online survey. The National LGBT College Student Survey remained online and was accessible to self-identified LGBT college students from October 15, 2001 through May 31, 2002. The length of time it took respondents to complete the entire 275 item questionnaire depended on several factors including students' personal experiences and risk behaviors upon which they were reporting as well as their previous experience using a computer and the Internet. On average, respondents took approximately 45 minutes to complete the entire survey.

In addition to descriptive analyses, independent T tests and chi-square analyses were conducted to determine if significant associations existed between response categories and LGBT college students' characteristics. In particular, comparisons were made between risk behaviors and LGBT students' biological sex at birth (male vs. female), age (18-24 years vs. 25 years or older), and race/ethnicity (White vs. other races/ethnicities). All tests were considered significant at or below the .05 alpha level.

RESULTS

RESPONDENTS

A total of 927 LGBT college students completed the first of four sections of the survey. After completing the first section, a significant proportion (44.3%) of respondents did not progress to or complete the remaining sections. A total of 516 students (55.7% of those who completed the first section) completed the second section of the survey, 462 (49.8%) completed the third section, and 450 (48.5%) completed the entire survey.

TABLE 1. Demographic Characteristics

Characteristic	<i>n</i>	Percentage
Biological sex at birth		
Male	428	49.4
Female	436	50.5
Intersex	1	0.1
Age		
18 years	132	15.4
19 years	174	20.3
20 years	133	15.5
21 years	137	16.0
22 years	73	8.5
23 years	42	4.9
24 years	23	2.7
25+ years	144	16.8
Year in school		
1st year/Freshman	167	19.4
2nd year/Sophomore	200	23.2
3rd year/Junior	171	19.8
4th year/Senior	176	20.4
Graduate student	125	14.5
Other	24	2.8
Race/Ethnicity		
White (not Hispanic)	654	76.2
Black (not Hispanic)	30	3.5
Hispanic/Latino	61	7.1
Asian/Pacific Islander	43	5.9
Biracial/Multiracial	39	4.5
Native American	3	0.3
Other	19	2.2
Residence		
Residence hall	406	44.0
Off campus with friends	199	21.6
Off campus with partner	103	11.2
Off campus alone	87	9.4
Off campus with parents/family	70	7.6
Other university housing	44	4.8
Fraternity or sorority house	11	1.2
Other	3	0.3

Bivariate analyses were conducted to determine if significant differences were reported among respondents who completed the entire survey and those who only completed the first section. No significant differences were reported based on respondents' sex, age, race/ethnicity, year in school, or college/university profile (2 vs. 4-year institution, public vs. private institution, residential vs. commuter institution, coeducational vs. single-sex institution, and religious vs. nonreligious affiliation). Thus, with regard to the demographic questions in the survey, there was not one particular type of student who was more likely to complete the entire survey.

An almost equal proportion of male and female LGBT college students completed the online survey. Respondents ranged in age from 18 to 60 years, with most (83.2%) being of traditional college age (18-24 years). A near even distribution of re-

TABLE 2. Sexual Orientation, Gender Presentation and Relationship Status

	Males (n)	Males (%)	Females (n)	Females (%)
To whom are you sexually attracted?***				
Males exclusively	279	65.5	10	2.3
Primarily males, occasionally females	95	22.4	52	12.1
Both males & females equally	20	4.7	76	17.7
Primarily females, occasionally males	18	4.2	158	36.8
Females exclusively	13	3.1	133	31.0
Age 1st aware of same sex attraction***				
Birth - 4 years of age	28	6.6	19	4.4
5 - 9 years of age	106	24.9	63	14.5
10 - 14 years of age	223	52.5	161	37.1
15 - 18 years of age	57	13.4	147	33.9
19+ years of age	11	2.6	44	10.1
Age acknowledged sexual orientation***				
Birth - 4 years of age	2	0.5	1	0.2
5 - 9 years of age	16	4.0	5	1.2
10 - 14 years of age	119	29.6	89	22.1
15 - 18 years of age	199	49.5	215	53.3
19+ years of age	66	16.4	93	23.1
Gender presentation*				
Present only as a man	397	94.5	6	1.5
Present only as a woman	7	1.7	358	89.3
Present as a woman, want to as man	0	=	7	1.7
Present as man, want to as woman	3	0.7	2	0.5
Sometimes man, sometimes woman	12	2.9	17	4.2
Neither as a man nor a woman	1	0.2	11	2.7
Current relationship status***				
Committed relationship, no outside sex	95	22.5	190	44.0
Committed relationship with outside sex	19	4.5	18	4.2
Dating and having sex	60	14.2	29	6.7
Dating, not having sex	34	8.0	35	8.1
Not dating but having sex	58	13.7	22	5.1
Not dating and not having sex	158	35.9	128	29.6
Polyamorous relationship	5	1.2	10	2.3

* $p < .05$; ** $p < .01$; *** $p < .001$

spondents was reported across year in school. Most respondents (76.2%) were White (not Hispanic) and 44% lived in a residence hall on campus (Table 1).

With regard to college/university information, most respondents reported that they attended a 4-year (96.9%), coeducational (98.6%), nonreligiously affiliated (87.5%), public (68.6%) institution. Approximately, 44% (43.9%) described their college/university as being primarily residential (i.e., over 50% of students lived on campus), compared with 23.9% being primarily commuter (i.e., over 50% of student lived off campus), 16.7% with an equal number of students living on and off campus, and 15.4% unsure.

The majority of males (89.9%) and females (67.8%) reported being primarily or exclusively attracted to persons of the same sex. However, males were significantly ($p < .001$) more likely than females to report being exclusively sexually attracted to persons of the same sex, while females were significantly more likely than males to report being attracted to both sexes (Table 2). Most respondents reported first becoming aware of their attraction to persons of the same sex between the ages of 10 to 14 years and most "came out" or acknowledged their same sex attraction between the ages of

15 to 18 years. Males were significantly more likely to become aware of ($p < .001$) and acknowledge ($p < .001$) their same sex attraction at an earlier age than females.

Most respondents reported their gender identity and presentation to be the same as their biological sex. However, 10.7% of females and 5.5% of males reported their gender presentation to be different than their biological sex. Slightly less than 2% of males (1.7%) and females (1.5%) reported that they presented only as the opposite sex. Another 0.7% of males and 1.7% of females reported that they wanted to present as the opposite sex. These respondents most likely represent the transgender population in this sample.

In regard to relationship status at the time of the survey, females (44.0%) were significantly ($p < .001$) more likely than males (22.5%) to report being in a committed relationship without outside sex. More than a third (35.9%) of male respondents and 29.6% of female respondents reported to be neither dating nor having sex at the time of the survey.

SEXUAL BEHAVIORS

The mean age at which respondents had their first sexual experience (defined as oral, anal, or vaginal intercourse) was 16.30 years ($SD = 3.24$; range = 2-26 years). No significant differences were reported in mean age of first sexual experience based on sex, age or race/ethnicity of respondents. Slightly more than 8% (8.3%) of respondents reported their first sexual experience to be before the age of 13 years. Significantly ($p < .001$) more males (12.3%) than females (4.5%) reported their first sexual experience to be before the age of 13 years.

Nearly 89% (88.9%) of respondents reported that they had had sex (defined as oral, anal or vaginal intercourse) with someone of the same sex during their lifetime. Males (93.9%) were significantly ($p < .001$) more likely than females (83.9%) and students aged 25 years and older (97.4%) were significantly ($p < .01$) more likely than students aged 18-24 years (86.9%) to report having sex with someone of the same sex.

The mean age at which students reported their first same sex sexual experience (defined as oral, anal, or vaginal intercourse) was 17.35 years ($SD = 4.06$; range = 5-44 years). Students aged 25 years and older were significantly ($p < .01$) older than students aged 18-24 years when they had their first same-sex sexual experience (19.47 vs. 16.81 years). Eight percent (8.2%) of respondents reported their first same sex sexual experience to be before the age of 13 years. Males were significantly ($p < .001$) more likely than females to report their first same sex sexual experience to be before the age of 13 years (13.4% vs. 2.7%, respectively).

The mean number of sex partners (lifetime) reported among LGBT college students was 12.24 ($SD = 31.43$; range = 0-500 partners); with a mean of 9.99 ($SD = 30.96$; range = 0-500) male partners and 2.29 ($SD = 6.60$; range = 0-30) female partners during their lifetime. Male respondents (17.54) and respondents aged 25 years and older (34.88) reported significantly ($p < .001$) more sex partners during their lifetime than female respondents (7.31) and respondents aged 18-24 years (7.71). Similarly, male respondents (16.84) reported significantly ($p < .001$) more male sex partners during their lifetime than female respondents (3.67) and respondents aged 25 years and older (29.68) reported significantly ($p < .001$) more male sex partners during their lifetime than respondents aged 18-24 years (6.22). However, female respondents (3.56) and respondents aged 25 years and older (5.89) reported significantly ($p < .001$) more female sex partners during their lifetime than male respondents (0.96) and respondents aged 18-24 years (1.52).

TABLE 3. Sexual Behaviors — Percent Ever Engaged (Lifetime)

Sexual Behaviors	Males (<i>n</i> = 212)	Females (<i>n</i> = 224)	Total (<i>n</i> = 436)
Received oral sex	96.2	95.1	95.6
Mutual masturbation	91.9	76.8	84.2
Performed oral sex on male	94.8	62.5	78.2
Vaginal fingering (gave)	34.9	80.8	58.5
Dildo/vibrator on self	35.4	71.4	53.9
Performed oral sex on female	23.9	76.8	50.7
Anal fingering (gave)	66.5	33.5	49.5
Anal fingering (received)	59.9	37.9	48.6
Vaginal fingering (received)	—	92.9	47.7
Sex in a public place	42.5	45.1	43.8
Penile-vaginal intercourse	28.3	55.4	42.2
Analingus (rimming)	53.8	23.7	38.3
Anal receptive sex	58.0	19.6	38.3
Anal insertive sex	66.5	3.1	33.9
Threesome (or more)	37.7	27.7	32.6
Dildo/vibrator on partner	14.2	47.3	31.2
Bondage	16.0	44.6	30.7
Sexual masochism	9.9	29.0	19.7
Troilism	23.1	13.8	18.3
Sexual sadism	6.1	17.0	11.7
Anal plug	8.0	10.3	9.2
Vaginal fisting (received)	—	17.0	8.7
Golden showers/water sports	12.3	3.6	7.8
Vaginal fisting (gave)	—	14.7	7.6
Anal beads on partner	2.8	6.3	4.6
Sex for money	3.8	1.8	2.8
Anal fisting (gave)	4.2	1.3	2.8
Autoerotic asphyxiation	1.9	3.6	2.8
Anal fisting (received)	2.3	—	1.1
Scat	0.5	—	0.2

Approximately 45% of respondents (44.6%) reported that they had sex with six or more (defined as "multiple") sex partners during their lifetime. Again, male respondents (53.1%) were significantly ($p < .001$) more likely than female respondents (36.9%) and respondents aged 25 years and older (83.3%) were significantly ($p < .001$) more likely than respondents aged 18-24 years (36.8%) to report having multiple sex partners.

In the 3 months preceding the completion of the survey, respondents reported having a mean of 1.92 ($SD = 3.15$; range = 0-30) sex partners; with a mean of 1.55 ($SD = 3.28$; range = 0-30) male partners and 0.44 ($SD = 0.67$; range = 0-4) female partners. Males had significantly ($p < .001$) more sex partners (2.80) than did females (1.08) and older (25 years and older) students had significantly ($p < .001$) more sex partners (3.81) in the previous 3 months than did younger (18-24 years) students (1.53). Similarly, male students had significantly ($p < .001$) more male partners in the past 3 months (2.82) than did females (0.34) and older students had significantly ($p < .001$) more male partners (3.48) than did younger students (1.16). However, female students had significantly ($p < .001$) more female partners (0.76) in the past 3 months than did male students (0.11).

LGBT college students reported engaging in a variety of sexual behaviors during their lifetime (Table 3). Nearly all respondents, 96.2% of males and 95.1% of females, reported that they had received oral sex during their lifetime. Ninety-five percent of male respondents (94.8%) and nearly two thirds of female respondents (62.5%) reported that they had performed oral sex on a male during their lifetime. Conversely, more than three quarters (76.8%) of female respondents and one quarter (23.9%) of male respondents reported that they performed oral sex on a female partner. Over half the females (55.4%) and 28.3% of males engaged in penile-vaginal intercourse during their lifetime; 58.0% of males and 19.6% of females engaged in anal receptive intercourse. Over a third of males and a quarter of females had participated in a threesome during their lifetime. Females reported using a dildo or vibrator on their sex partner and engaging in vaginal fisting, bondage, and sexual sadism or masochism more frequently than males. Males, on the other hand, reported receiving money for sex and engaging in anilingus and golden showers/water sports more frequently than females.

CONDOM/BARRIER USE

When asked if they used a condom or other barrier method during their last sexual encounter (among those who had oral, anal or vaginal sex), 72.4% of students reported that they did not use any barrier. Slightly more than a quarter (27.6%) of respondents reported using a condom or other barrier during their last sex. Males (35.6%) were significantly ($p < .001$) more likely than females (20.2%) to report that they had used a condom or other barrier method at last sex. Similarly, students aged 25 years and older (36.8%) were significantly more likely than students aged 18-24 years (25.8%) to report using a barrier at last sex.

Among students who had ever engaged in penile-vaginal intercourse, respondents were asked to report how often they or their sex partner used a condom during this behavior. Overall, 61.1% of respondents said they used a condom most or all the time (defined as consistent condom use) during penile-vaginal intercourse. Females (66.9%) were significantly ($p < .001$) more likely than males (51.9%) to report that they or their partners used condoms consistently during penile-vaginal sex. Moreover, younger students (68.2%) were significantly ($p < .001$) more likely to report using condoms consistently during penile-vaginal sex than older students (40.8%).

With regard to condom use during anal sex, 63.1% of respondents who engaged in this behavior said they or their partner used condoms consistently. Male students (70.8%) were significantly ($p < .001$) more likely than female students (44.4%) and students aged 25 years and older (71.7%) were significantly ($p < .001$) more likely than students aged 18-24 years (60.6%) to report condom use most or all of the time during anal sex.

Nearly 90% (89.2%) of respondents reported that they never used condoms or any other barrier during oral sex. This percent was consistent across sex, age, and racial/ethnic categories, as no significant differences were reported.

INJECTION DRUG AND ALCOHOL USE

Slightly more than 2% (2.1%) of respondents reported that they had ever injected an illegal drug during their lifetime. Students aged 25 years and older (8.7%) were significantly ($p < .001$) more likely to report IDU during their lifetime than students aged 18-24 years (0.8%). Students of other races/ethnicities (3.7%) were significantly ($p < .05$) more likely to report IDU than White students (1.9%).

Very few (1.1%) LGBT college students reported that they had ever shared needles for IDU during their lifetime. However, older students were significantly ($p < .001$) more likely than younger students (5.0% vs. 0.3%, respectively) and students of other races/ethnicities (2.5%) were significantly ($p < .05$) more likely than White students (0.8%) to report sharing needles for IDU during their lifetime.

When asked how often they drank alcohol and/or used drugs before having sex, 63% of LGBT college students reported doing so at least some of the time. Significant differences were reported based on students' sex, age, and race/ethnicity. Females (67.7%) were significantly ($p < .05$) more likely than males (56.1%), older students (76.3%) were significantly ($p < .05$) more likely than younger students (59.8%), and White students (66.0%) were significantly ($p < .05$) more likely than students of other races/ethnicities (47.4%) to report drinking alcohol and/or using drugs before having sex.

HIV/STI TESTING AND DIAGNOSES

Approximately 45% (44.6%) of LGBT college students reported that they had ever been tested for HIV during their lifetime. Significantly ($p < .001$) more students aged 25 years and older (81.5%) reported ever being tested for HIV than students aged 18-24 years (38.2%). Male students (50.7%) were significantly ($p < .05$) more likely than female students (39.2%) to report ever being tested for HIV.

When asked to report with which, if any, STIs they had ever been diagnosed during their lifetime, roughly 1% or fewer students reported being diagnosed with genital herpes (1.1%), HIV (0.9%), chlamydia (0.9%), gonorrhea (0.9%), bacterial vaginosis (0.9%), trichomoniasis (0.6%), and hepatitis B (0.4%). No students reported ever being diagnosed with syphilis or hepatitis A. The most commonly reported STI among self-identified LGBT college students was HPV/genital warts with 4.0% of respondents reporting ever being diagnosed with this STI.

BODY PIERCING

Students were asked if they had a body piercing on any part of their body other than their ear lobes. Nearly half (48.4%) of respondents reported having a body piercing. Significantly ($p < .001$) more female students (67.4%) reported having a body piercing than male students (32.6%). No significant differences were reported for having a body piercing based on students' age or race/ethnicity.

Among students who reported having a body piercing, most (62.4%) reported having a piercing in their ear cartilage. More than a third (34.4%) reported having their tongue pierced. Students also reported having their navel (26.2%), nose/nostril (18.6%), nipple (17.6%), temple/eyebrow (16.3%), face/lip (7.7%), and/or genitals (4.5%) pierced.

A summary of all significant differences reported in HIV/STI associated risk behaviors among LGBT college students based on sex, age and race/ethnicity is presented in Table 4.

DISCUSSION

Most of the LGBT college students who completed the survey reported that they first became aware of their same-sex sexual attraction when they were in middle school (10-14 years) and "came out" when they were in high school (15-18 years). However, males were more likely to recognize their same sex attraction and to "come out" at an earlier age than females. These are important facts of which middle and high school

TABLE 4. Differences in HIV/STI Risk Behaviors by Sex, Age, and Race/Ethnicity

Males were significantly more likely than females to

- Have their first opposite*** and same sex*** sexual experience before the age of 13 years;
- Have sex with someone of the same sex during their lifetime;***
- Have multiple (6 or more) sex partners during their lifetime;***
- Have more sex partners during their lifetime*** and past three months;***
- Have more male partners during their lifetime*** and past three months;***
- Use a condom or other barrier during their last sexual encounter;***
- Use a condom most or all the time during anal sex;*** and
- Ever be tested for HIV.*

Females were significantly more likely than males to

- Have more female sex partners during their lifetime*** and past three months;***
- Use a condom most or all the time during penile-vaginal sex;***
- Drink alcohol and/or use drugs before sex;+ and
- Have a body piercing.***

Students aged 25 or more years were significantly more likely than students aged 18–24 years to

- Have more sex partners during their lifetime*** and past 3 months;***
- Have sex with someone of the same sex during their lifetime;***
- Have multiple (6 or more) sex partners during their lifetime;***
- Have more male*** and female*** partners during their lifetime;
- Have more male partners during the past 3 months;***
- Use a condom or other barrier during their last sexual encounter;***
- Use condoms most or all the time during anal sex;***
- Report IDU during their lifetime;***
- Share needles for IDU during their lifetime;***
- Drink alcohol and/or use drugs before sex;+ and
- Ever be tested for HIV.***

Students aged 18–24 years were significantly more likely than students aged 25 or more years to

- Initiate same sex sexual activity at a younger age;*+ and
- Use condoms most or all the time during penile-vaginal sex.***

White students were significantly more likely than students of other races/ethnicities to

- Drink alcohol and/or use drugs before sex.*

Students of other races/ethnicities were significantly more likely than white students to

- Report IDU during their lifetime;* and
- Share needles for IDU during their lifetime.*

Note. IDU = injection drug use. * $p < .05$; ** $p < .01$; *** $p < .001$.

teachers and counselors should be made aware and prepared to handle/address in school through pre-service and/or in-service training.

In addition, males were more likely to report being exclusively sexually attracted to persons of the same sex, whereas females were more likely to report being sexually attracted to persons of both the same and opposite sex. Females were more likely to be in a committed relationship than were males. All of these results were consistent with those reported in other investigations of LGBT populations (Floyd & Stein, 2002; Maguen, Floyd, Bakeman, & Armistead, 2002; Peterson, Leffert, & Graham, 1995).

Although transgender students may have constituted a small percentage of the total sample in this investigation, it is important to acknowledge their presence among the college student population. Furthermore, it is vital that these students are included and their unique needs and risk behaviors are addressed in HIV/STI prevention programs on college campuses. However, in order to better identify the specific needs and

risk behaviors among transgender college students, further research must be conducted.

Eighty-nine percent of LGBT college students reported having sex with someone of the same sex during their lifetime. Response to this question is comparable to that reported among the general college student population in 1995 in which 86% reported engaging in sexual intercourse during their lifetime (CDC, 1997). More than 8 percent (8.3%) of LGBT college students reported their first sexual experience to be before the age of 13 years. This percentage was notably higher than that reported among the general college student population (2.8%) in 1995 (CDC, 1997). Moreover, a higher percentage of male (12.3%) and female (4.5%) LGBT college students reported their first sexual experience to be before the age of 13 years compared with 4.2% of males and 1.5% of females in the NCHRBS.

Similarly, the percentage of LGBT college students who reported having multiple (6 or more) sex partners during their lifetime (44.6%) was considerably higher than the percentage reported among the general college student population (34.5%) in 1995 (CDC, 1997). Of notable difference was the percentage of male (53.1%) and older (83.3%) LGBT college students who reported having multiple sex partners, compared with 37.8% of male and 49.6% of older students in the NCHRBS. Even the percent of female (36.9%) and younger (36.8%) LGBT college students reporting multiple sex partners was higher than the percentage reported among female (31.8%) and younger (25.7%) students in the NCHRBS.

It is important to note that the higher percentage of LGBT college students reporting earlier sex and multiple sex partners may be explained in how "sexual intercourse" was defined and/or interpreted in these two investigations. For example in this investigation, "sexual intercourse" was defined as "oral, anal and/or vaginal intercourse." However, in the NCHRBS, "sexual intercourse" was left open to interpretation. Thus, it is possible that students who completed the NCHRBS thought sexual intercourse referred only to penile-vaginal intercourse and did not include oral and/or anal intercourse in their sexual activity, accounting for smaller percentages.

Over 60% of LGBT college students reported using a condom most or all the time (defined as consistent condom use) during penile-vaginal and anal intercourse. However, only 4% used a condom or other barrier consistently during oral sex. When considering the types and extent of sexual behaviors in which LGBT college students reported engaging, especially among students who had a tongue and/or genital piercing, these percentages are worthy of concern.

Nearly 28% (27.6%) of LGBT college students reported that they used a condom or other barrier during their last sexual encounter. This percentage was consistent with the 29.6% reported among the general college student population in 1995 (CDC, 1997). However, the percentage of older (25 years and older) LGBT college students who used a condom at last sex (36.8%) was nearly twice the percentage reported among older college students in the NCHRBS (18.5%). Conversely, only 25.8% of younger (18-24 years) LGBT college students used a condom at last sex compared with 37.7% reported among younger students in the NCHRBS.

IDU and needle-sharing behavior among LGBT college students was low, especially among younger and White students. These results were consistent with those reported in the NCHRBS, as less than 2% (1.7%) of the general college student population in 1995 reported IDU during their lifetime. The low percentage of IDU reported among college students may be an indication that HIV/AIDS education and prevention messages to avoid IDU and/or needle-sharing behavior are successfully

reaching these young people. However, it is important to note that a greater percentage of older LGBT college students reported IDU (8.7%) than older college students in 1995 (3.3%) (CDC, 1997). Moreover, LGBT college students of different races/ethnicities (3.7%) were significantly more likely to report IDU than White (1.9%) LGBT students, whereas no significant differences were reported based on race/ethnicity in the NCHRBS. More effort and attention to these risk behaviors among older LGBT college students and/or LGBT students of other races/ethnicities may need to be made in both research and prevention programs.

Although IDU and needle-sharing behavior was low among LGBT college students, use of alcohol and/or other drugs prior to sexual activity was considerably higher. Perhaps because alcohol and other drug use is not a direct mode of HIV/STI transmission, LGBT college students do not consider these behaviors to be as risky. Regardless of the reasoning behind this phenomenon, educational efforts discussing how alcohol and/or other drug use can impair judgment and decisions to have sex and/or use condoms or other barriers, may need to be reinforced among LGBT college students.

Less than half (44.6%) of LGBT college students reported ever being tested for HIV during their lifetime. This percentage was higher than that reported among the general college student population (38.8%) in 1995. When comparing by age, the percentages of LGBT students aged 18-24 years (38.2%) and 25 years and older (81.5%) were notably higher than the percentages reported among students aged 18-24 years (32.1%) and 25 years and older (50.2%) in the 1995 NCHRBS. In addition, significantly more male LGBT students reported ever being tested for HIV than females. This may be due to the fact that many lesbians and bisexual women often do not perceive themselves to be at risk for HIV (Einhorn & Polgar, 1994; Norman & Perry, 1996; Richardson, 2000; Stevens, 1994, 2001). This is particularly disturbing considering LGBT female college students were significantly more likely to report engaging in both same and opposite sex sexual behaviors and to be less likely to use a condom during anal sex than were males.

In addition to continuing efforts to educate about HIV/AIDS, LGBT college students must also receive information about other STIs as well. Although self-reports of diagnoses with STIs were low among LGBT college students, it is vital that these young people are made aware of the asymptomatic nature of many STIs as well as their association with HIV infection. Furthermore, educational efforts targeting LGBT college students must include information about HPV, one of the most common STIs among college students in the United States, and should address differences between high-risk and low-risk strains of the virus (Kiviat et al., 1989; Linnehan & Groce, 1999).

LIMITATIONS

Caution must be exercised when interpreting the results of this investigation. First, the survey targeted self-identified LGBT college students who participated in LGBT college student organizations. Thus, LGBT college students who did not have an LGBT organization at their institution or who did not participate in their institution's LGBT organization were less likely to participate in the study. Second, whether students participating in LGBT organizations received information about the survey was dependent on the actions of their faculty advisor and/or officers. Faculty advisors and/or officers who were not interested in the survey and/or who did not have the time or means to distribute this information to students may have limited survey participa-

tion. Third, participation in the survey required access to and skills for using a computer and/or the Internet. Students without access to a computer or who did not have computer skills would be less likely to participate. Fourth, students who self-selected to participate in the study may have been different from students who chose not to participate. As a result, the HIV/STI associated risk behaviors reported in this investigation may not be representative of those of all LGBT college students who participate in LGBT student organizations.

Placing the survey instrument online had numerous advantages over a paper-and-pencil survey format, including less expense for researchers and increased accessibility and anonymity for participants. However, it also had its disadvantages. For instance, providing increased anonymity in completing the survey may have increased the likelihood that students took the survey on more than one occasion or that individuals who were not college students and/or who did not have an LGBT orientation or identity completed the survey. These limitations are similar for most investigations utilizing the Internet as a means of data collection (Mustanski, 2001; Nicholson, White, & Duncan, 1999).

Lastly, due to the extreme length of the questionnaire (275 items), less than half the respondents who completed the first section went on to complete the entire survey. However, this phenomenon was similar to those reported in other Internet research investigations where a significant proportion of respondents fail to progress beyond the first section of a survey (Mustanski, 2001; Nicholson et al., 1999). Although no significant differences were reported between the characteristics of respondents who completed the entire survey in this investigation and those who only completed the first section, a larger number of respondents to complete the entire survey would have certainly aided in strengthening the validity and generalizability of survey results.

CONCLUSION

Preservice and in-service preparation programs for middle and high school health teachers and counselors should include information about sexual orientation and identity. Such training programs should focus not only on increasing teachers' comfort in providing classroom instruction using language inclusive of students' sexual orientation/identity but also on preparing teachers and counselors to address the specific needs of LGBT students. As indicated in this investigation, LGBT students reported that they were first beginning to recognize their same sex-sexual attraction when they were in middle school and "came out," or acknowledged their sexual orientation, when they were in high school. Thus, teachers and counselors need to be prepared to handle challenges that may arise with LGBT students, such as increased isolation, teasing, and/or physical abuse inflicted by other students, as these students recognize and/or tell others about their sexual orientation (Floyd & Stein, 2002; Maguen et al., 2002; Rotheram-Borus & Fernandez, 1995; Savin-Williams, 1994). Furthermore, HIV/STI education and prevention programs in the high schools must address methods of risk reduction for sexual behaviors beyond penile-vaginal intercourse, including oral and/or anal sex, as LGBT college students reported initiating opposite and same-sex sexual activity when they were in high school.

Health education and prevention programs should be developed to address the specific HIV/STI associated risk behaviors of LGBT college students in the United States. Furthermore, these programs should consider the differences in risk taking among LGBT college students based on sex, age, and race/ethnicity. In particular, these programs should address LGBT college students' sexual risk taking including

the risk for HIV/STI associated with having multiple sex partners and not using condoms or other barriers during different types of sexual activity. In particular, the fact that LGBT college students were not using condoms consistently for penile-vaginal and/or anal sex may be an important issue on which to focus in future interventions and/or research. Moreover, associations between HIV/STI transmission, alcohol and/or other drug use prior to sex, and having a new or unhealed body piercing (especially in the tongue or genitals) while engaging in sexual activity without the use of a condom or other barrier should be addressed.

In a number of ways the behaviors of LGBT college students reported in this investigation were not that different from those reported among the general college student population in 1995. However, it is important to note that these are completely different cohorts of college students. To get a more accurate assessment of the differences and similarities in risk behaviors between LGBT and the general college student population, a more recent investigation with a similar cohort of college students is necessary. Thus, the researchers in this investigation are anxiously awaiting results from the next NCHRBBS, which is to be conducted by the CDC during the fall of 2003.

Finally, to delve more extensively into the differences in specific health and HIV/STI associated risk behaviors of lesbian, gay, bisexual, and transgender college students, additional research must be conducted. In particular, more effort should be made to examine the risk behaviors of LGBT college students who attend 2-year, single-sex, religiously affiliated, and/or private institutions.

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