

# Sexual Behaviors and Sexual Violence: Adolescents With Opposite-, Same-, or Both-Sex Partners

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## KEY WORDS

YRBS, same-sex behavior, sexual risk, adolescence, representative sample

## ABBREVIATIONS

STI—sexually transmitted infection

NYC—New York City

YRBS—Youth Risk Behavior Surveys

YRBSS—Youth Risk Behavior Surveillance System

The views in this article are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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**WHAT'S KNOWN ON THIS SUBJECT:** High rates of risky sexual behaviors among youth with same-sex partners have been documented that may predispose this group to high rates of sexually transmitted infections, including HIV.



**WHAT THIS STUDY ADDS:** This is the first report of sexual risk behaviors and identities in a population-based sample of sexually active male and female adolescents, analyzed according to reported sex of partner.

## abstract

**OBJECTIVE:** To describe sexual behaviors, sexual violence, and sexual identity among a population-based sample of adolescents according to the sex of their sex partners, considering separately those with partners of both sexes.

**METHODS:** From the 2005–2007 New York City Youth Risk Behavior Surveys, 3805 male and 3456 female adolescents reported having had sex and the sex of their sexual contacts. Subgroups were constructed: only opposite-sex partners; only same-sex partners; and partners of both sexes (both-sex partners). Weighted prevalence, risk behaviors (eg, using drugs/alcohol with sex), and sexual identity among subgroups were described.

**RESULTS:** Similar numbers of sexually active male (3.2%) and female adolescents (3.2%) reported only same-sex behavior, but fewer male than female adolescents reported both-sex partners (3.7% vs 8.7%;  $P < .001$ ). Male adolescents with both-sex partners reported a higher prevalence of sexual risk behaviors than male adolescents with only opposite-sex or only same-sex partners. Female adolescents with both-sex or only same-sex partners reported a higher prevalence of risk behaviors than female adolescents with only opposite-sex partners. Adolescents with both-sex partners reported a marked prevalence of dating violence and forced sex. Many adolescents with only same- or both-sex partners (38.9%) self-identified as straight.

**CONCLUSIONS:** Of sexually active adolescents, 9.3% reported a same-sex partner, a higher estimate than other published rates. Those who reported both male and female partners reported behaviors that placed them at risk for sexually transmitted infections (STIs), including HIV. Pediatricians and school health providers must inquire about behaviors, not identity, to determine STI risk, and STI education should be appropriate for youth with same-sex partners. *Pediatrics* 2010;126:879–886

Adolescence is a period during which sexual experimentation and identity development take place. For adolescents exploring sexual relationships with partners of the same or both sexes, “sexual minority youth,” usual social and personal challenges may be compounded by rejection by their peers, social isolation, verbal abuse, physical violence, and poor access to confidential health care.<sup>1,2</sup> These youth have been found to comprise a relatively small proportion of sexually active in-school youth (5%–6%),<sup>3</sup> but given the various duress, they may be disproportionately prone to depression, suicidal ideation, substance abuse, and adverse sexual health outcomes (eg, unintended pregnancy and sexually transmitted infections [STIs]).<sup>3–12</sup>

High rates of risky sexual behaviors among sexual minority youth have been documented<sup>4,6–9,11,13–15</sup>; however, the generalizability of many of these studies is limited by a reliance on convenience samples of self-identified gay, lesbian, and bisexual youth.<sup>9,11,13,14</sup> Population-based survey analyses of sexual risk that classify respondents according to self-reported sexual identity or according to the sex of persons with whom they report any sexual contact, even if they have not had sexual intercourse, may have limited applicability because they do not explicitly characterize sexually active populations with risk of exposure to STIs.<sup>4–6,8</sup> Some studies have focused on nonheterosexual orientations without stratification according to sex of the respondent.<sup>4–6</sup> Others have combined respondents with bisexual and exclusively homosexual behavior, often to yield larger groups; however, persons who are bisexual according to self-identification or behavior have been found to differ in sexual risk and outcomes from persons who are exclusively homosexual and should probably not be grouped with them.<sup>3,16–18</sup>

We characterize adolescent sexual behaviors with members of the same, opposite, and both sexes. In addition, we report the frequency of discordance between sexual identity and sexual behavior in terms of youth with same-sex partners who identify as heterosexual. To our knowledge, this is the first report of sexual risk behaviors, sexual violence, and identities in a population-based sample of sexually active male and female adolescents, analyzed according to sex and reported sex of partner.

## METHODS

### Respondents

We analyzed combined data from the 2005 and 2007 New York City (NYC) Youth Risk Behavior Surveys (YRBSs). These surveys are a part of the Youth Risk Behavior Surveillance System (YRBSS), which includes national, state, and local samples of in-school youths surveyed with a common, validated data collection instrument. Through anonymous, cross-sectional, in-school surveys, the YRBSS collects information on many health-related behaviors and outcomes among high school students. The biennial, self-administered NYC YRBS is conducted by the NYC Department of Health and Mental Hygiene with the Department of Education. A 2-stage cluster sample design that accounts for high school and the classroom produces a representative sample of NYC public high school students. Schools from the 5 boroughs of NYC were selected for survey; probability of school selection was proportional to enrollment. All second-period classes in these schools were listed, classes were randomly selected from the sampling frame for each school, and students in each selected classroom during second period (except those who previously chose to opt-out) completed the questionnaire. In both 2005 and 2007, a school response rate

of 98% and student response rate of 70% yielded an overall response rate of 68%, and a combined sample of 17 220 students. The NYC YRBS were the largest of the 22 local youth risk behavior surveys conducted in 2005 and 2007. The 99-question surveys were approved by the NYC Department of Health and Mental Hygiene institutional review board.

### Measures

The majority of the YRBS questions of interest were standard YRBSS questions and identical in 2005 and 2007, including whether the adolescent had ever had sexual intercourse, age at first intercourse, number of sex partners in lifetime and in the last 3 months, whether a condom had been used at most recent intercourse, whether alcohol or drugs had been used at most recent intercourse, whether there was a history of forced sex, and whether there was incidence of dating violence during the last year. Respondents were asked about the sex of persons with whom they had ever had sexual contact. Response categories were: “I have never had sexual contact,” “females,” “males,” and “females and males.” Neither “intercourse” nor “sexual contact” was accompanied by definitions of sex (oral, anal, or vaginal). The NYC YRBS question to measure sexual identity was: “Which of the following best describes you?” with response categories of “heterosexual (straight),” “gay or lesbian,” “bisexual,” and “not sure.”

### Analytic Methods

A weighting factor was applied to each student record to adjust for nonresponse and varying probabilities of selection. Weights were also determined by a poststratification adjustment factor calculated with gender within grade and with race/ethnicity.

**TABLE 1** Number and Weighted Prevalence of Sexual Behavior Subgroups, Sexually Active Youth, NYC YRBS 2005–2007

Sex of Partners	N	% (95% CI)	Race/Ethnicity						Age				
			Non-Hispanic White		Non-Hispanic Black		Hispanic		≤16 y		>16 y		
			N	% (95% CI)	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)	
Sexually active male students													
Female partners only	3559	93.1 (90.9–94.8)	395	89.7 (83.1–93.8)	1166	92.9 (88.8–95.5)	1636	94.4 (92.1–96.0)	2137	93.1 (90.1–95.2)	1414	93.1 (90.5–95.0)	
Male partners only	127	3.2 (2.2–4.6)	<sup>a</sup>	<sup>a</sup>	43	3.6 (2.0–6.2)	64	2.8 (1.9–4.2)	75	3.1 (1.9–4.8)	51	3.5 (2.2–5.4)	
Male and female partners	119	3.7 (2.5–5.5)	14	5.7 <sup>b</sup> (3.1–10.2)	36	3.6 <sup>b</sup> (1.7–7.3)	51	2.8 (1.8–4.5)	74	3.8 (2.3–6.3)	45	3.5 (2.3–5.3)	
Sexually active female students													
Male partners only	3016	88.1 (85.9–89.9)	321	83.9 (79.3–87.7)	974	89.7 (86.6–92.2)	1410	87.7 (84.6–90.3)	1787	87.7 (85.1–89.8)	1226	88.7 (86.2–90.8)	
Female partners only	121	3.2 (2.3–4.4)	11	2.2 <sup>b</sup> (1.0–5.1)	38	3.7 <sup>b</sup> (1.9–7.0)	58	3.2 (2.2–4.5)	67	3.4 (2.2–5.4)	54	2.9 (1.9–4.6)	
Male and female partners	319	8.7 (7.0–10.8)	43	13.9 (9.7–19.3)	89	6.6 (4.6–9.3)	151	9.1 (6.9–11.9)	177	8.9 (6.7–11.7)	141	8.4 (6.8–10.4)	

<sup>a</sup> Data are suppressed because of imprecise and unreliable estimates. The estimate's relative SE is >50%.

<sup>b</sup> Estimate should be interpreted with caution. The estimate's relative SE (a measure of estimate precision) is >30% or the sample size is <50, which makes the estimate potentially unreliable.

Our analysis was limited to those respondents who reported ever having had intercourse (“sexually active” students); we assigned sexual behavior subgroups on the basis of the reported sex of sexual contacts. Subgroups were sexually active male respondents who reported sexual contact with only female (only opposite-sex), only male (only same-sex), or both male and female adolescents (both-sex partners); and corresponding subgroups for sexually active female respondents. Data were weighted to adjust for school and student nonresponse, and statistical analyses were conducted with SUDAAN 9.0 (Research Triangle Institute, Research Triangle Park, NC), software designed for use with complex survey data.

The weighted prevalence of reporting only opposite-sex, only same-sex, and both-sex partners was examined overall, and according to age and race/ethnicity. Weighted risk characteristics were described for the 3 behavior subgroups of male adolescents and female adolescents. An estimate was considered unstable if its relative SE was >30%; in other words, if the SE of the survey estimate divided by the estimate itself was >0.3. Differences between weighted prevalence estimates were

considered statistically significant if *t* test *P* values were <.05. The weighted percent of sexually active youth with same-sex partners who self-identified as heterosexual was calculated.

## RESULTS

### Characteristics of All Respondents

Completed surveys were available for 17 220 students. Of 17 171 students for whom sex was known, approximately half (8844 of 17 171 [51.5%]) were female. Most respondents with known age were 15 to 17 years old (13 015 of 17 183 [75.7%]); only 0.3% were younger than 14; 13.7% were age 14; and 10.2% were 18 or older. The age distribution of male and female adolescents was similar. Of 15 009 students who answered the question on sexual intercourse, 55.2% (3898 of 7021) of male and 43.8% (3501 of 7988) of female adolescents reported that they had ever had sex. Ninety-eight percent of sexually active students (3805 male and 3456 female) reported the sex of lifetime sexual contacts and were included in additional analyses.

### Weighted Data on Behavior Subgroups

Among sexually active male respondents, 93.1% had sexual contact only

with female partners, 3.2% had contact only with other male partners, and 3.7% had contact with both male and female partners. Among sexually active female respondents, 88.1% had contact only with male partners, 3.2% had contact only with female partners, and 8.7% had contact with both male and female partners (Table 1). A total of 9.3% of students reported a same-sex partner (either same-sex only or both sexes); 6.1% reported both-sex partners, which represented 65.6% of those with any same-sex partners. Female respondents were more than twice as likely as male respondents to report both male and female partners ( $P < .001$ ).

### Male Students

The majority of male respondents (≥89%) in each of 3 racial/ethnic groups reported sexual contact only with female partners, and non-Hispanic white male adolescents were more likely than non-Hispanic black and Hispanic male adolescents to report both-sex partners (Table 1), although these differences were not statistically significant. Age distributions of male adolescents with opposite-sex, same-sex, and both-sex partners were similar.

Male adolescents with partners of both sexes were more likely than those

**TABLE 2** Weighted Prevalence of Risk Behaviors Among Sexually Active Male Students in Subgroups Defined by Sexual Behavior, NYC YRBS 2005–2007

	Sex of Partner(s) Reported		
	Female Only ( <i>N</i> = 3559), % (95% CI)	Male Only ( <i>N</i> = 127), % (95% CI)	Male and Female ( <i>N</i> = 119), % (95% CI)
Age at first sex, y			
≤13	51.3 (47.2–55.4) <sup>a</sup>	39.8 (23.7–58.4) <sup>a</sup>	71.91 (56.3–83.6)
14–15	37.3 (33.9–40.7) <sup>a</sup>	47.2 (31.1–63.9) <sup>a</sup>	18.8 (10.4–31.5)
≥16	11.4 (9.5–13.6)	13.0 (7.1–22.7)	9.3 (4.2–19.2) <sup>b</sup>
No. of lifetime sex partners			
1–4	65.8 (61.4–69.9) <sup>a</sup>	63.6 (44.3–79.3) <sup>a</sup>	35.9 (21.7–53.1)
≥5	34.2 (30.1–38.6) <sup>a</sup>	36.4 (20.7–55.7) <sup>a</sup>	64.1 (46.9–78.3)
No. of sex partners in last 3 mo			
0	41.3 (36.5–46.3) <sup>a</sup>	34.3 (19.7–52.7)	22.4 (12.8–36.0)
1	33.9 (30.6–37.3)	54.2 (38.3–69.3) <sup>a</sup>	21.0 (11.3–35.7)
≥2	24.8 (21.2–28.8) <sup>a</sup>	11.5 (6.0–20.9) <sup>a,b</sup>	56.6 (39.2–72.6)
Alcohol/drugs at last sex			
Yes	16.4 (14.7–18.1) <sup>a</sup>	18.9 (7.8–39.3) <sup>b</sup>	42.4 (27.6–58.8)
No	83.6 (81.9–85.3) <sup>a</sup>	81.1 (60.7–92.2)	57.6 (41.2–72.4)
Condom during last sex			
Yes	79.8 (77.4–81.9) <sup>a</sup>	62.3 (47.4–75.3)	44.1 (26.6–63.2)
No	20.2 (18.1–22.6) <sup>a</sup>	37.7 (24.6–52.7)	55.9 (36.8–73.4)
Intimate partner violence (last 12 mo)			
Yes	13.2 (11.6–15.0) <sup>a</sup>	6.0 (2.7–12.5) <sup>a,b</sup>	34.8 (21.9–50.3)
No	86.8 (85.0–88.4) <sup>a</sup>	94.0 (87.5–97.3) <sup>a</sup>	65.2 (49.7–78.1)
Forced sex (ever)			
Yes	6.5 (5.2–8.0) <sup>a</sup>	23.3 (9.6–46.3) <sup>b</sup>	31.6 (18.1–49.0)
No	93.5 (92.0–94.8) <sup>a</sup>	76.7 (53.7–90.4)	68.4 (51.0–81.9)

<sup>a</sup> Statistically significant difference in prevalence estimate ( $P < .05$ ), compared to persons with male and female partners.

<sup>b</sup> Estimate should be interpreted with caution. The estimate's relative SE (a measure of estimate precision) is  $>30\%$  or the sample size is  $<50$ , which makes the estimate potentially unreliable.

with only opposite-sex or only same-sex partners to report an earlier age at first sex (Table 2); median age at sexual debut was 14 years for male adolescents with both-sex partners versus 15 years for those with only opposite-sex partners and 16 years for those with only same-sex partners. Male adolescents with both-sex partners were significantly more likely than other subgroups to report 5 or more lifetime partners. Similarly, sex with 2 or more partners in the last 3 months was reported by 56.6% of male adolescents with both-sex partners versus 24.8% with only opposite-sex ( $P = .0005$ ) and 11.5% with only same-sex partners ( $P < .0001$ ). Male adolescents with both-sex partners (42.4%) were much more likely than those with opposite-sex partners (16.4%) to report using alcohol and/or drugs with the last sexual encounter ( $P = .002$ ). Male adolescents with both-sex partners were much less

likely to report using a condom at last sex (44.1%) compared with those with opposite-sex partners (79.8%;  $P = .0002$ ). Male adolescents with both-sex partners were significantly more likely than were the other male subgroups to report being a victim of intimate partner violence in the previous year (34.8%) and also more likely than the male adolescents with opposite-sex partners only to be a victim of forced sex (male adolescents with both-sex partners: 31.6%; male adolescents with opposite-sex partners: 6.5%;  $P = .0018$ ).

### Female Students

Non-Hispanic white female respondents (13.9%) were more likely than non-Hispanic black (6.6%) and Hispanic female respondents (9.1%) to report male and female partners (Table 1), although these differences were not statistically significant. Age distributions of female adolescents with

opposite-sex, same-sex, and both-sex partners were similar.

Although female adolescents with both-sex and only same-sex partners were similar to each other regarding many risk behaviors, those with both-sex partners reported more risk (Table 3). Female adolescents with both-sex or only same-sex partners reported an earlier age of sexual debut than heterosexual female adolescents. Female adolescents were more likely to report 5 or more lifetime partners if they had both-sex partners (37.1%) or only same-sex partners (29.1%) than if they had only opposite-sex partners (14.0%) ( $P < .0001$  for female adolescents with both-sex versus opposite-sex partners). Also, female adolescents were more likely to report 2 or more partners in the past 3 months if they had both-sex partners (26.5%) or only same-sex partners (29.4%) than if they had only opposite-sex partners (11.5%) ( $P < .0001$  for female adolescents with both-sex versus opposite-sex partners). Female adolescents were more likely to report the use of alcohol/drugs with the last sexual encounter if they had both-sex partners (23.0%) or only same-sex partners (22.3%) than if they had only opposite-sex partners (10.0%). More than one-third of female adolescents with both-sex partners reported intimate partner violence (35.8%) and forced sex (34.1%), which was significantly higher than the prevalence among other female subgroups.

### Data on Sexual Identity

Among sexually active students, 90.9% identified as heterosexual/straight, 1.1% as gay/lesbian, 5.4% as bisexual, and 2.6% as unsure of their sexual identity. Many sexually active adolescents with only same or both-sex partners (38.9% overall; 39.4% of male adolescents, 38.7% of female adolescents) self-identified as heterosexual/

**TABLE 3** Weighted Prevalence of Risk Behaviors Among Sexually Active Female Students in Subgroups Defined by Sexual Behavior, NYC YRBS 2005–2007

	Sex of Partner(s) Reported		
	Male Only ( <i>N</i> = 3016), % (95% CI)	Female Only ( <i>N</i> = 121), % (95% CI)	Male and Female ( <i>N</i> = 319), % (95% CI)
Age at first sex, y			
≤13	21.7 (18.7–25.0) <sup>a</sup>	56.5 (37.4–73.9)	41.8 (32.5–51.7)
14–15	53.8 (50.6–56.9)	32.4 (18.6–50.2)	49.7 (40.1–59.4)
≥16	24.5 (21.3–28.1) <sup>a</sup>	11.0 (5.6–20.6) <sup>b</sup>	8.4 (5.0–14.0)
No. of lifetime sex partners			
1–4	86.0 (83.4–88.3) <sup>a</sup>	70.9 (49.4–85.8)	62.9 (53.5–71.4)
≥5	14.0 (11.7–16.6) <sup>a</sup>	29.1 (14.2–50.6) <sup>b</sup>	37.1 (28.6–46.5)
No. of sex partners in last 3 mo			
0	28.6 (24.7–32.8)	30.0 (13.7–53.7) <sup>b</sup>	25.2 (17.0–35.6)
1	59.9 (55.6–64.1) <sup>a</sup>	40.6 (24.8–58.6)	48.3 (40.56–56.2)
≥2	11.5 (9.2–14.3) <sup>a</sup>	29.4 (14.4–50.8) <sup>b</sup>	26.5 (19.8–34.5)
Alcohol/drugs at last sex			
Yes	10.0 (8.2–12.2) <sup>a</sup>	22.3 (9.1–45.5) <sup>b</sup>	23.0 (15.5–32.6)
No	90.0 (87.8–91.8) <sup>a</sup>	77.7 (55.0–90.9)	77.0 (67.4–84.5)
Condom at last sex			
Yes	69.7 (66.9–72.4) <sup>a</sup>	59.3 (42.4–74.2)	52.7 (43.6–61.7)
No	30.3 (27.6–33.1) <sup>a</sup>	40.7 (25.8–57.6)	47.3 (38.3–56.4)
Intimate partner violence (last 12 mo)			
Yes	15.0 (12.7–17.5) <sup>a</sup>	14.2 (6.1–29.5) <sup>a,b</sup>	35.8 (26.9–45.8)
No	85.0 (82.5–87.3) <sup>a</sup>	85.8 (70.5–93.9) <sup>a</sup>	64.2 (54.2–73.4)
Forced sex (ever)			
Yes	15.6 (13.0–18.7) <sup>a</sup>	12.5 (5.5–26.0) <sup>a,b</sup>	34.1 (24.3–45.4)
No	84.4 (81.3–87.0) <sup>a</sup>	87.5 (74.0–94.5) <sup>a</sup>	65.9 (54.6–75.7)

<sup>a</sup> Statistically significant difference in prevalence estimate ( $P < .05$ ), compared to persons with male and female partners.

<sup>b</sup> Estimate should be interpreted with caution. The estimate's relative SE (a measure of estimate precision) is  $>30\%$  or the sample size is  $<50$ , which makes the estimate potentially unreliable.

straight. Among sexually active male adolescents with only male partners or with both-sex partners, 69.2% and 14.4% reported a heterosexual identity, respectively. Among sexually active female adolescents with only female partners or with both-sex partners, 72.6% and 26.2% reported a heterosexual identity, respectively.

## DISCUSSION

We found that almost 1 in 10 sexually active NYC students reported same-sex behavior, a higher estimate than what has been reported in other population-based studies of adolescents, including those that used varying phrasing of the question to establish sexually active populations and broader measures than behavior (ie, sexual identity or sexual contact irrespective of intercourse) to classify respondents.<sup>3,5,6</sup> We were surprised to find that a majority (two-thirds) of ad-

olescents with same-sex partners also reported opposite-sex partners. Adolescents who report both male and female partners deserve attention; we noted a higher prevalence of several behaviors that directly influence STI acquisition and/or transmission, and a higher prevalence of intimate partner violence and forced sex among these youth. The discordance between sexual behavior and sexual identity we observed, wherein almost 40% of youth with same-sex partners self-identified as heterosexual, has important consequences for public health prevention activities and the clinical care of adolescents.

Consistent with research by Goodenow et al,<sup>8</sup> we noted that male adolescents with both-sex partners reported more sexual risk-taking than all other male youth. This finding is important because male adolescents with male

partners are likely at an increased risk for STIs (including HIV), given the high rates of infections in populations in which they may find male partners,<sup>19</sup> and those with female partners pose an additional risk for bridging to the female population. We would not expect STI risk to be materially higher among female adolescents with both-sex partners compared with those with only male partners; however, compared with female adolescents with only male partners, they also reported a higher prevalence of several behaviors that influence STI transmission. The sexual risk-taking we measured takes place in the context of schools with a considerable prevalence of STIs. The prevalence of chlamydia/gonorrhea in NYC high schools was 7.3% during the 2007–2008 academic year, with a peak of 12.5% in 17-year-old female students (Bureau of STD Control, NYC Department of Health and Mental Hygiene, personal communication, 2008). The sizable prevalence of STIs coupled with elevated rates of risky behaviors among youth with same-sex partners (eg, unprotected intercourse) put these individuals at particular risk.

Large proportions of NYC male and female respondents with both-sex partners were the victims of sexual violence, with approximately one-third reporting experience with partner-violence and with forced sex,  $>3$  times the national estimates for these measures.<sup>20</sup> The health outcomes associated with such abuse are serious. Teenage pregnancy risk has been strongly linked to dating violence<sup>21</sup> and sexual abuse, especially for male adolescents and persons who have experienced both incest and nonfamilial abuse.<sup>22</sup> Nonconsensual sexual experience is a significant predictor of subsequent nonconsensual sexual experience, psychological problems, alcohol problems, and self-harm in adulthood.<sup>23</sup>

Men with a history of repeated victimization are likely to fear the consequences of requesting partners to use condoms,<sup>24</sup> which places them at additional risk for STIs.

We found that 6% of sexually active students identified as gay, lesbian, or bisexual, consistent with estimates from previous studies of adolescents in the general population (range: 1%–8%).<sup>3,25</sup> Research by Rosario et al<sup>26</sup> suggests that sexual self-identification often occurs after attractions and behaviors are well established, and sexual identity can be strongly influenced by culture, stigma, and social trends and subject to change, especially among youth,<sup>25</sup> which may account for the considerable discordance between reported sex of partners and sexual identity in our study sample. As seen in this study and others, sexual identity is not an accurate reflection of sexual behavior,<sup>2,7,27–29</sup> thus it is not appropriate to use sexual identity to target groups for prevention. The most effective way to assess the STI risk of patients is for medical providers and counselors to take thorough sexual histories that include questions about the number and sex of partners with whom specific behaviors are practiced. A survey of >2000 high school students found that the majority (>80%) would find it helpful to talk with a physician about sexual matters, yet most reported that physicians did not discuss sex and risk prevention with them.<sup>30</sup> Providers need to be competent in discussing sexuality to provide appropriate health care, but multifaceted approaches are crucial. Improved patient care may be achieved by appropriate training, including sensitivity training, of all office staff and the strategic use of posters and educational materials that recognize and legitimize same-sex behaviors.

There are several limitations to our analysis. First, the YRBS misses youth

in alternative schools and out-of-school youth, groups likely to have persons with same-sex partners and/or higher prevalence of risk behaviors.<sup>31</sup> Nonetheless, the YRBSS remains 1 of the strongest methods for tracking health and risk among the majority of US adolescents.<sup>25,32</sup> Second, the YRBS relies on self-report of many sensitive and stigmatized behaviors and experiences, and self-report is subject to social desirability bias. However, the potential for underreporting experiences was likely minimized by the self-administered, anonymous survey procedures, and prevalence estimates from school-based surveys have generally been found to reflect accurate reporting.<sup>33</sup> Third, 2 key questions (sexual intercourse and sexual contact) lacked explicit definition. In addition, there was no referent period for the question about sexual contact. For this reason, respondents could have had more sexual contacts than partners with whom they had intercourse, and could have had both male and female sexual contacts, whereas only having had intercourse with persons of 1 sex. Also, our analysis was limited to students who reported “sexual intercourse” and therefore may have either excluded some students with only same-sex sexual activity (those students who did not construe oral and anal sex as “sexual intercourse”) or included those who consider oral sex to be sexual intercourse, as in the case of some female respondents who report only female partners. Last, we found no differences between sexual behavior subgroups with regard to race/ethnicity; some subsamples may have been too small to detect them. However, we did have adequate sample sizes to address our main analytic questions and provide important information on the overall profiles of youth with same-, opposite-, or both-sex partners.

## CONCLUSIONS

The NYC YRBS measures 2 key dimensions of sexual orientation, identity and behavior, and our analysis of these data provides valuable information with which to develop more effective school health programs and other policy and programmatic interventions needed to reduce risk and improve health outcomes among vulnerable youth. Our findings have implications not only for the ~300 000 high school-aged students in NYC, but also for millions of adolescents nationwide. NYC students with both male and female partners are engaging in high rates of several risky sexual behaviors, and this is likely true of adolescents in other areas. Yet in 2007, only 13% of US public high school students reported having been tested for HIV.<sup>20</sup> There is an indication for risk-reduction approaches targeting multiple behaviors, and screening for HIV and other STIs on the basis of detailed sexual history-taking is crucial.

Prevention messages must be appropriate for adolescents with same-sex attraction or behavior who are a part of heterosexually identified audiences; sexual health education programs that emphasize unintended pregnancy prevention and abstinence until marriage are not equally relevant for youth with opposite-sex and same-sex partners. Finally, pediatricians and school health providers must ask about sexual violence when speaking with teenagers to identify those with a need for interventions to reduce the likelihood of additional victimization.

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**Smartphones and You:** *When was the last time you saw an adult (or teen for that matter) without a cellphone? Currently almost all adults in the US own a cellphone and 25% a smartphone. Smartphones, devices that allow the user to surf the net, check email, play games and music, read books, and video chat (and even talk), are expected to dominate the market. What do people do with those smartphones? According to an article in The New York Times (Corasaniti N, September 14, 2010), smartphone users download a lot of applications. As of June 2010, almost 60% of users had downloaded an application in the past 30 days. Based on an August 2010 survey of more than 4000 mobile subscribers by the Nielsen Company, games are the most popular category of applications used with 61% of users reporting use of a downloaded game in the past 30 days. Weather applications are the next most popular category followed by navigation (50%) and social networking applications (49%). Facebook, The Weather Channel, Google Maps and Pandora (a music service) are among the top 5 applications used regardless of operating platform. Smartphone users shopping at the Apple App store download almost twice as many applications as those shopping at the Android Market or the BlackBerry App World Store. They also are more willing to pay for an application, paying for 1 in 2 applications compared to one in 3.5 for the others. More and more advertisements now appear in mobile applications probably because almost 2/3 of teens will view the ads. Only 1/3 of men compared to 44% of women refuse to view them at all. What is the take home message? Smartphone users love their downloaded applications although hopefully not while driving.*

Noted by WVR, MD

## Sexual Behaviors and Sexual Violence: Adolescents With Opposite-, Same-, or Both-Sex Partners

Preeti Pathela and Julia A. Schillinger

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