Published in final edited form as:
Contraception. 2010 December 1; 82(6): 549–555. doi:10.1016/j.contraception.2010.05.007.

Type of contraception method used at last intercourse and associations with health risk behaviors among US adolescents

Patricia A. Cavazos-Rehg[1,*], **Melissa J. Krauss**[2], **Edward L. Spitznagel**[3], **Mario Schootman**[4], **Jeffrey F. Peipert**[5], **Linda B. Cottler**[1], and **Laura Jean Bierut**[1]

[1]Department of Psychiatry, Washington University School of Medicine, St. Louis, MO 63110

[2]Division of Biostatistics, Washington University School of Medicine, St. Louis, MO 63110

[3]Department of Mathematics, Washington University in St. Louis, St. Louis, MO 63130

[4]Division of Health Behavior Research, Washington University School of Medicine, St. Louis, MO 63108

[5]Department of Obstetrics and Gynecology, Washington University School of Medicine, St. Louis, MO 63110

Abstract

Background—This study was conducted to examine associations with contraception methods used at last sexual intercourse among US adolescents.

Study design—Data consisted of sexually active adolescents (9^{th}–12^{th} grade, weighted n = 24,638) from 1999–2007 Youth Risk Behavior Surveillance System (YRBSS). We performed multinomial multivariable logistic regression analyses with condom users at last sexual intercourse as the reference group.

Results—Males who used alcohol, cigarettes, marijuana, and cocaine were more likely to use no method/unsure of method (OR = 2.4 CI: 1.7–3.4) or rely on withdrawal (OR = 2.6 CI: 1.5–4.3). Females with six or more sexual partners were more likely to rely on withdrawal (OR: 2.9 CI: 2.1–3.9) or contraception methods that offer no STI protection (i.e., birth control pills, OR: 1.9 CI: 1.4–2.5, and depot medroxyprogesterone acetate [DMPA, marketed as Depo Provera], OR: 2.6 CI: 1.6–4.2). Earlier age of sexual debut was also associated with nonuse.

Conclusion—Prevention efforts should focus on at-risk adolescents including substance-using males, females with six or more sexual partners, and those who initiate sexual intercourse at an early age.

[*]Corresponding author and reprint requests: Patricia A. Cavazos-Rehg, Ph.D., Campus Box 8134, Department of Psychiatry, 660 South Euclid, St. Louis, MO 63110, Phone: (314) 362-2152, FAX: (314) 362-4247, rehgp@psychiatry.wustl.edu.

Conflicts of Interest

Dr. Bierut has acted as a consultant for Pfizer, Inc. in 2008. All remaining authors do not have a financial interest/arrangement or affiliation with any organizations that could be perceived as real or apparent conflict of interest in the context of the subject of this article.

Keywords

contraception methods; adolescent risk behaviors; sexual intercourse; STD prevention

1. Introduction

Problem behaviors are often observed in clusters; a higher incidence of unsafe and/or unreliable contraception methods has been correlated with other risky behaviors such as early sexual debut, having a high number of sexual partners [1] and substance use [2]. While past research has examined health risk behavior associations with condom use versus nonuse [2], little is known about health risk behavior associations with contraception methods other than condoms. Moreover, risk associations between having used none, one, or multiple substances and type of contraceptive used across multiple types of methods (i.e., oral contraceptives, depot medroxyprogesterone acetate [DMPA, marketed as Depo Provera], or withdrawal) are also unknown [2]. Such findings have the potential to strengthen previous reports about the co-occurrence in health risk behaviors and allow for a better understanding of contraception practices among adolescents.

In the present study, we investigated health risk behavior associations (substance use, sexual debut, and number of sexual partners) with contraception methods at last sexual intercourse across several contraception methods including dual methods, condoms only, birth control pills only, DMPA only, and withdrawal. We also examined associations between health risk behaviors and nonuse of any contraception method because up to 20% of sexually active adolescents report nonuse [3]. We used five years of pooled data from a nationally representative sample to underscore how risk behaviors cross multiple domains (i.e., sexual risk behaviors and substance use).

2. Methods

2.1. Data source and participants

The Youth Risk Behavior Surveillance System (YRBSS) was established by the Centers for Disease Control and Prevention (CDC) to measure health-risk behaviors that result in unintentional and intentional injuries, including risky sexual behaviors and substance use. For each survey period, the YRBSS utilizes a three-stage cluster sampling design to produce a representative sample of high school students (9^{th} through 12^{th} grade) attending public, Catholic, and other private schools in the United States. The survey has been conducted biennially since 1991 with a sample of about 15,000 students per survey year. Data are weighted to adjust for nonresponse and oversampling of African Americans and Hispanics in the sample. The overall weights are scaled to ensure that the weighted count of students is equivalent to the entire sample size, and the weighted proportions of students in each grade correspond with the national population proportions for each survey year [4]. The YRBSS includes questions that have gone through extensive psychometric testing. The items related to sexual behavior show moderate reliability (.63) [4]. The present study utilizes 1999–2007 data (five years: 1999, 2001, 2003, 2005, and 2007) because the items of interest in the proposed project were worded identically during this time frame. The institutional review board at Washington University approved the study as exempt as it did not meet the definition of human subject participation.

We were interested in examining method of contraception used; thus, males and females who never engaged in sexual intercourse (weighted n=34,261, 47.6%), did not answer the contraception question (weighted n=7,240, 10.1%), or used "some other method" of contraception (weighted n=558, 0.8%) were excluded from analysis. Non-responders to the

contraception question were more likely to be male ($p < 0.001$) but did not differ by age or race. Males and females who did not provide racial/ethnic information (weighted n=283) were also excluded from analysis. We examined the three major racial/ethnic groups (Caucasians, Africans Americans, and Hispanics) because Asians, American Indians/ Alaskan Natives, Native Hawaiians/Other Pacific Islanders, and Multiple-races (non-Hispanic) had much smaller sample sizes (total weighted n=2,414, 8.1% of remaining sample). Males and females who were not in grade 9–12 (weighted n=65) were also excluded. Finally, males and females with missing data for any of the independent variables of interest were excluded (weighted n=2,476, 9.1% of remaining sample). Those excluded due to missing covariate data were more likely to be non-Caucasian, male, and younger (all $p<0.001$). This resulted in 24,638 male and female participants from 9th–12th grade for years 1999–2007 (5 years of data, average of approximately 4,928 participants per survey year) for analysis.

2.2. Measures and analysis

The outcome variable was assessed by two questions. The first question was, “The last time you had sexual intercourse, did you or your partner use a condom?” The second question was, “The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy?” Participants could select from the following responses: birth control pills, condoms, Depo-Provera (injectable birth control; [brand name for depot medroxyprogesterone acetate or DMPA]), withdrawal, some other method, not sure, or no method was used to prevent pregnancy. Condom use could be answered on both questions. If respondents mentioned a method to prevent pregnancy other than condoms (i.e., birth control pills or DMPA) plus condoms, they were coded as “dual method.” Similar to past reports, participants who said they were “not sure” if they used a contraceptive method at last sexual intercourse (≤ 1.5% of each year’s respondents) were coded as nonusers [2].

Substance use behaviors were assessed with the Risk Scale, a four-point lifetime use scale (scores of 0–4) created by Santelli et al. [2,5] to reflect whether a respondent ever smoked cigarettes, drank alcohol, used marijuana, and/or used cocaine. Thus, scores on the Risk Scale were included as a covariate. Scores on the Risk Scale ranged from zero, which reflected non-use of any substance, to four which reflected having used all four substances. Differences in sexual behaviors (whether one is abstinent or sexually active and number of sexual partners) by risk score have been documented in past research [2].

Number of sexual partners was included as a covariate because existing studies have documented an association between contraceptive use and lifetime number of sexual partners, though reports on the nature of this relationship have been conflicting [5–9]. Number of sexual partners was assessed by the question “During your life, with how many people have you had sexual intercourse?” Responses were: I have never had sexual intercourse, 1, 2, 3, 4, 5, or 6 or more people. Those who were not sexually active were excluded and based on distributions and risk levels, categories included 1 sexual partner (reference group), 2–5 sexual partners, and 6 or more sexual partners.

Because young age of first sexual intercourse has been linked to reduced use of contraception, it was also included as a covariate [10]. Age of sexual debut was assessed by the question “How old were you when you had sexual intercourse for the first time?”. Responses were “I have never had sexual intercourse”, “11 years old or younger”, “12 years old”, “13 years old”, “14 years old”, “15 years old”, “16 years old”, and “17 years old or older”. Based on distributions and risk levels, categories included 17 years or older (reference group), 15–16 years old, 13–14 years old, and 12 or younger.

Survey year was included in the model to adjust for any differences in outcomes by year. Models were run separately for males and females because there were significant interactions between gender and many of the independent variables and past studies document gender differences in types of contraceptives used and the potential for males to unreliably report their female partners' use of birth control pills or DMPA [11].

Multivariable multinomial logistic regression analyses, an extension of logistic regression for outcomes with more than two levels [12], were performed to identify variables predictive of type of contraceptive use at last sexual intercourse, with condoms only as the reference group because it was the most common contraceptive method used. All analyses were performed using SAS-callable SUDAAN version 9.0.1, a software program that uses Taylor series linearization to adjust for design effects of complex sample surveys like the YRBSS [13]. Because data were pooled over several years, analyses took into account all stages of clustering (year, stratum, and primary sampling unit). To adjust for nonresponse and oversampling of African Americans and Hispanics/Latinos in the sample, each student received a weighting factor. The overall weights were scaled to ensure that the weighted count of students was equivalent to the entire sample size, and the weighted proportions of students in each grade corresponded with the national population proportions for each survey year. Sample weights were also applied to all analyses. Descriptive statistics were used to summarize the data. All independent variables were entered in the sex-specific models simultaneously to estimate the risk associated with each independent variable of interest while adjusting for all other covariates of interest.

3. Results

The majority of participants in this sample were Caucasian; nearly half were aged 17 years and older. Most participants used only condoms at their last sexual intercourse (additional details of contraception methods used at last sexual intercourse are provided in Table 1). Of these sexually active students, most males and females experienced sexual debut between the ages of 13 through 16 and had 2–5 sexual partners. Nearly half of the participants had a score of three on the Risk Scale (equivalent to having used three of the four following substances: alcohol, cigarettes, marijuana, or cocaine). The majority of participants had tried alcohol (93.6% males and 90.8% females), cigarettes (79.1% males and 81.0% females), and marijuana (69.0% males and 64.3% females). The percentage of participants who reported cocaine use was considerably less (16.8% males and 14.6% females). Nearly all of the cocaine users had also used the other three substances; specifically, 94.5% of cocaine users are in Risk Scale category of four (94.1% males and 94.9% females). Table 1 provides additional descriptive information on contraception across gender and racial/ethnic groups.

In the multivariable multinomial logistic regression male model, as shown in Table 2, males with a score of four on the Risk Scale were significantly more likely to use no method/unsure of method (OR = 2.4) or rely on withdrawal (OR = 2.6) at last sexual intercourse versus males with a score of zero who used condoms only. Males with an earlier age of sexual debut (age 12 or younger) were more likely to use no method/unsure of method at last sexual intercourse (OR = 2.2) versus males with a later age of sexual debut (17 or older) who used condoms only. Racial/ethnic differences were also found in the male model. African American males were less likely than Caucasian males to rely on withdrawal (OR = 0.7) at last sexual intercourse. Hispanic males were more likely than Caucasian males to use no method/unsure of method (OR = 1.5) at last sexual intercourse. Among males, higher number of sexual partners was significantly associated with contraception methods in univariate analysis but then lost significance in the multivariable models. Because adolescent males often lack accurate knowledge about their female partners' use of modern

methods like birth control pills and DMPA, these findings are not reported in detail here but can be found in Table 2 [14–16].

As shown in Table 3, higher number of sexual partners was significantly associated with increased reliance on withdrawal (OR = 1.5 for 2–5 sexual partners and OR = 2.9 for 6 or more sexual partners), birth control pills (OR = 1.9), or DMPA (OR = 2.6) versus females with one sexual partner who relied only on condoms at last sexual intercourse. In addition, a steady increase in risk for using no method/unsure of method was noted as age of sexual debut became younger (reference group 17+ years old: 15–16 years old: OR = 1.5; 13–14 years old: OR = 2.3; ≤ 12 years old: OR = 4.5). A number of racial/ethnic differences were also found in the female model. African American females were less likely than Caucasian females to use no method/unsure of method (0.8) or withdrawal (OR = 0.5), birth control pills only (OR = 0.4), and dual method (OR = 0.5) at last sexual intercourse. Similarly, Hispanic females were less likely than Caucasian females to rely on birth control pills only (OR = 0.4), DMPA (OR = 0.6), and dual method (OR = 0.4) at last sexual intercourse. Hispanic females were more likely than Caucasian females to use no method/unsure of method (OR = 1.7) at last sexual intercourse. Among females, higher scores on the Risk Scale were significantly associated with contraception methods in univariate analysis but then lost significance in the multivariable models.

4. Discussion

In a nationally representative sample of US adolescents, we found that males who had used all four substances comprised in the Risk Scale (i.e., a group distinguished from other substances users by their use of cocaine) were over twice as likely to rely on withdrawal, use no method of contraception, or be unsure of the method used at last sexual intercourse when compared with sexually active male non-substance users. The withdrawal method is the contraceptive method with the highest rate of failure; it entails a great deal of motivation and discipline and is a challenge with adolescent couples [17]. Our findings are concerning because males who experiment with cocaine and other substances (i.e., alcohol, cigarettes, and marijuana) are potentially least prepared for positive parenting roles but are at higher risk for causing a pregnancy.

Another major finding of our study is that during their most recent sexual intercourse, adolescent females with a higher number of sexual partners were more likely to rely on contraceptive methods that offer no protection from STI transmission despite their seemingly higher risk. Sexually experienced adolescent females using birth control pills or DMPA might believe they are with a “safe” partner and care more about unintended pregnancy than STI susceptibility. In terms of prevention, prescribing physicians can encourage the use of dual methods for females who use non-barrier contraceptive methods and have an increased number of sexual partners (i.e., 6 or more).

For both males and females, younger age of sexual debut was associated with not using any type of contraception method at last sexual intercourse. The risk for nonuse of any contraception method was highest for females who had sexual debut at age 12 years or younger (OR = 4.6) and steadily decreased as age of sexual debut became later. Sexuality education programs within school settings are often the primary and preferred source of information about sexual behaviors for adolescents [18] and our findings cast doubt on whether these programs are being implemented early enough to instill safe sexual habits. It may also be the case that current sexuality education programs are not efficient and/or relevant for those with an early age of sexual onset.

Interesting differences in contraception use at last sexual intercourse were found across racial/ethnic groups. Hispanics were more likely than Caucasians to use no method of contraception at last sexual intercourse. When a method of contraception was used, minority adolescents relied on condoms only to a greater extent than Caucasians while Caucasians more frequently relied on other methods of contraception including birth control pills, DMPA, and dual methods. Our findings support past research that documents a higher rate of unprotected sexual intercourse among Hispanics [19] and a tendency for both Hispanics and African Americans to use condoms over other methods of contraception. In past reports, similar findings have been attributed to the convenience and low cost of condoms [20] as well as a number of sociocultural factors including family and partner dynamics, access to health care resources and/or information, and cultural beliefs that impact their contraception choices [21]. Our findings may also reflect Caucasians' greater access to pharmacological methods of contraception which combine consistency and effectiveness [22] and/or overarching concerns about pregnancy than STD prevention [23]. Furthermore, our findings suggest that disparities in STIs among African Americans might also be attributed to other explanatory factors not examined in this study such as frequency of sexual intercourse and/or condom failure.

The findings of this study were limited by several factors. The YRBSS is cross-sectional and does not provide information on potential explanatory variables such as socioeconomic status, social class, family structure, and/or relationships with friends or intimate partners that are needed for more in-depth analyses. In addition, YRBSS is a school-based survey which does not include data from high school dropouts or adolescents schooled at home. We also rely on participants' self-report for all of the data which contain some unknown level of reporting error, although past studies of the YRBSS questionnaire have found that students tend to report health risk behaviors reliably over time [4]. Lastly, the contraceptive-use variables used here reflect only the contraceptive method used at last sexual intercourse, and do not necessarily represent the ongoing contraception habits of the participants. However, contraceptive method used at last sexual intercourse is likely the best measure of adolescents' contraceptive behaviors because laboratory and field tests have found that adolescents have problems with summarizing their contraceptive behaviors even for short time spans [24]. Moreover, a number of national and international studies have used a similar indicator of adolescents' contraceptive use [25–29].

In conclusion, we found substance use, sexual behaviors including early sexual debut and number of sexual partners, and race/ethnicity to be associated with whether and what type of contraceptive method was used at last sexual intercourse among a nationally representative sample of adolescents. To effectively prevent negative sexual health outcomes in the adolescent population, program efforts must work to delay sexual debut and instill safe sexual behaviors before they begin. In addition, clinicians are encouraged to routinely screen for substance use and sexual behaviors. Clinicians can use YRBSS survey items to query sexual behaviors (see Table 4). The use of these survey items in a paper-pencil format can be inexpensive, brief, and nonthreatening to adolescents [30]. In addition, routine screening can help adolescents to recognize that health behavior queries are a normal part of clinical care [31]. Furthermore, clinicians can identify adolescents who are at highest risk of negative sexual health outcomes who can be referred for more in-depth assessments and appropriate health counseling and services [30,32,33]. We identified these adolescents to be those who initiate sexual intercourse at an early age, substance-using males, and females with six or more sexual partners.

Acknowledgments

This publication was also made possible by Grant Numbers UL1 RR024992 and KL2 RR024994 from the National Center for Research Resources (NCRR), a component of the National Institutes of Health (NIH), and NIH Roadmap for Medical Research and by K02DA021237 from the NIH. This publication was also supported in part by an NIH Career Development Award to Dr. Cavazos-Rehg (NIDA, K01DA025733). This publication was also supported in part by an NIH Midcareer Investigator Award to Dr. Bierut (K02 DA021237). This publication was also made possible in part by NIDA grant 5 T32 DA07313-09 (Drug Abuse Comorbidity, Prevention & Biostatistics) awarded to Dr. Cottler.

References

1. Davies SL, DiClemente RJ, Wingood GM, Person, et al. Predictors of inconsistent contraceptive use among adolescent girls: Findings from a prospective study. J Adolesc Health 2006;39:43–49. [PubMed: 16781960]
2. Santelli J, Carter M, Orr M, et al. Trends in sexual risk behaviors, by nonsexual risk behavior involvement, U.S. high school students, 1991–2007. J Adolesc Health 2009;44:372–379. [PubMed: 19306796]
3. Gavin L, MacKay AP, Brown K, et al. Sexual and reproductive health of persons aged 10–24 years - United States, 2002–2007. MMWR Surveill Summ 2009;58:1–58. [PubMed: 19609250]
4. Brener ND, Kann L, Kinchen SA, et al. Methodology of the youth risk behavior surveillance system. MMWR Recomm Rep 2004;53:1–13. [PubMed: 15385915]
5. Shrier LA, Goodman E, Emans SJ. Partner condom use among adolescent girls with sexually transmitted diseases. J Adolesc Health 1999;24:357–361. [PubMed: 10331842]
6. Ford KP, Sohn W, Lepkowski JP. American adolescents: sexual mixing patterns, bridge partners, and concurrency. Sex Transm Dis 2002;29:13–19. [PubMed: 11773873]
7. Fortenberry JD, Brizendine EJ, Katz BP, et al. Post-treatment sexual and prevention behaviours of adolescents with sexually transmitted infections. Sex Transm Infect 2002;78:365–368. [PubMed: 12407242]
8. DiClemente RJ, Durbin M, Siegel D, et al. Determinants of condom use among junior high school students in a minority, inner-city school district. Pediatrics 1992;89:197–202. [PubMed: 1734383]
9. Soskolne V, Aral SO, Magder LS, et al. Condom use with regular and casual partners among women attending family planning clinics. Fam Plann Perspect 1991;23:222–225. [PubMed: 1743275]
10. Raine T, Minnis AM, Padian NS. Determinants of contraceptive method among young women at risk for unintended pregnancy and sexually transmitted infections. Contraception 2003;68:19–25. [PubMed: 12878282]
11. Anderson JE, Santelli JS, Morrow B. Trends in adolescent contraceptive use, unprotected and poorly protected sex, 1991–2003. J Adolesc Health 2006;38:734–739. [PubMed: 16730603]
12. Agresti, A. An Introduction to Categorical Data Analysis. New York: Wiley; 1996.
13. Shah, BV.; Bieler, GS. The SUDAAN User's Manual, Release 7.5. Research Triangle Park, NC: Research Triangle Institute; 2002.
14. Guzman BL, Schlehofer-Sutton MM, Villanueva CM, et al. Let's talk about sex: How comfortable discussions about sex impact teen sexual behavior. J Health Commun 2003;8:583–598. [PubMed: 14690890]
15. Coleman LM, Ingham R. Exploring young people's difficulties in talking about contraception: how can we encourage more discussion between partners? Health Educ Res 1999;14:741–750. [PubMed: 10585382]
16. Politohara D, Kahn JR. Communication and contraceptive practices in adolescent couples. Adolescence 1985;20:33–43. [PubMed: 3984813]
17. Santelli JS, Abma J, Ventura S, et al. Can changes in sexual behaviors among high school students explain the decline in teen pregnancy rates in the 1990s? J Adolesc Health 2004;35:80–90. [PubMed: 15261636]
18. Shtarkshall RA, Santelli JS, Hirsch JS. Sex education and sexual socialization: Roles for educators and parents. Perspect Sex Reprod Health 2007;39:116–119. [PubMed: 17565625]

19. Manlove J, Ryan S, Franzetta K. Patterns of contraceptive use within teenagers' first sexual relationships. Perspect Sex Reprod Health 2003;35:246–255. [PubMed: 14744656]
20. Santelli JS, Morrow B, Anderson JE, et al. Contraceptive use and pregnancy risk among U.S. high school students, 1991–2003. Perspect Sex Reprod Health 2006;38:106–111. [PubMed: 16772192]
21. Sterling SP, Sadler LS. Contraceptive use among adolescent Latinas living in the United States: The impact of culture and acculturation. J Pediatr Health Care 2009;23:19–28. [PubMed: 19103403]
22. Frost J, Darroch JE. Factors associated with contraceptive choice and inconsistent method use, United States, 2004. Perspect Sex Reprod Health 2008;40:94–104. [PubMed: 18577142]
23. Everett SA, Warren CW, Santelli JS, et al. Use of birth control pills, condoms, and withdrawal among U.S. high school students. J Adolesc Health 2000;27:112–118. [PubMed: 10899471]
24. Morris L, Warren CW, Aral SO. Measuring adolescent sexual behaviors and related health outcomes. Pub Health Rep 1993;108 Suppl:31–36. [PubMed: 8210272]
25. Godeau E, Nic Gabhainn S, Vignes C, et al. Contraceptive use by 15-year-old students at their last sexual intercourse: Results from 24 countries. Arch Pediatr Adolesc Med 2008;162:66–73. [PubMed: 18180415]
26. Santelli JS, Lindberg LD, Abma J, et al. Adolescent sexual behavior: Estimates and trends from four nationally representative surveys. Fam Plann Perspect 2000;32:156–194. [PubMed: 10942351]
27. Flisher AJ, Chalton DO. Adolescent contraceptive non-use and covariation among risk behaviors. J Adolesc Health 2001;28:235–241. [PubMed: 11226847]
28. Darroch JE, Singh S, Frost JJ. Differences in teenage pregnancy rates among five developed countries: The roles of sexual activity and contraceptive use. Fam Plann Perspect 2001;33:244–281. [PubMed: 11804433]
29. Abma JC, Martinez GM, Mosher WD, et al. Teenagers in the United States: sexual activity, contraceptive use, and childbearing, 2002. Vital Health Stat 2004:1–48.
30. Zink TM, Levin L, Rosenthal SL. Adolescent risk behavior screening: The difference between patients who come in frequently and infrequently. Clin Pediatr 2003;42:173–180.
31. Bull SS, Rietmeijer C, Fortenberry JD, et al. Practice patterns for the elicitation of sexual history, education, and counseling among providers of STD services: Results from the Gonorrhea Community Action Project (GCAP). Sex Transm Dis 1999;26:584–589. [PubMed: 10560723]
32. Duke NN, Sieving RE, Pettingell SL, et al. Associations between health screening questions and sexual risk behaviors in adolescent female clinic patients: Identifying a brief question format to yield critical information. Clin Pediatr 2008;47:564–572.
33. Boekeloo BO, Schamus LA, Simmens SJ, et al. A STD/HIV prevention trial among adolescents in managed care. Pediatrics 1999;103:107–115. [PubMed: 9917447]

Table 1

Descriptive characteristics of sexually active 9–12th graders, 1999–2007 YRBS (N=24,638)‡

	Males (n=12,494)		Females (n=12,144)	
Variable	**%**	**95% CI**	**%**	**95% CI**
Age of participant, years				
≤ 15	25.5	24.2–26.9	24.3	23.2–25.4
16	26.0	24.9–27.1	28.0	26.7–29.3
≥ 17	48.5	46.9–50.1	47.7	46.2–49.3
Race				
Caucasian	63.6	60.6–66.4	66.4	63.6–69.1
African American	19.5	17.2–21.9	18.8	16.6–21.2
Hispanic	17.0	15.3–18.8	14.8	13.2–16.6
Contraception use at last sexual intercourse by race				
Caucasian				
Condoms only	63.6	61.9–65.3	48.1	42.2–50.0
Dual method‡‡	6.1	5.4–7.0	8.5	7.7–9.4
Birth control pills only	9.3	8.3–10.4	15.8	14.6–17.2
DMPA only	1.2	0.9–1.6	2.9	2.4–3.6
Withdrawal only	8.5	7.5–9.6	10.7	9.7–11.9
No method/unsure	11.4	10.2–12.6	14.0	12.7–15.3
African American				
Condoms only	75.5	73.4–77.4	62.0	58.9–64.9
Dual method‡‡	2.6	2.0–3.4	5.9	4.8–7.2
Birth control pills only	2.4	1.8–3.2	6.8	5.4–8.5
DMPA only	0.5	0.3–0.9	3.0	2.3–3.9
Withdrawal only	6.0	5.0–7.2	7.2	6.1–8.5
No method/unsure	13.0	11.4–14.8	15.2	13.3–17.2
Hispanic				
Condoms only	66.0	63.1–68.9	50.6	47.3–53.9
Dual method‡‡	3.0	2.0–4.5	3.7	2.8–4.9
Birth control pills only	5.0	4.0–6.2	6.7	5.2–8.5
DMPA only	0.7	0.4–1.5	1.8	1.2–2.8
Withdrawal only	6.8	5.5–8.3	11.8	10.3–13.4
No method/unsure	18.5	16.4–20.8	25.5	22.7–28.5
Risk scale				
4	16.0	14.8–17.2	13.7	12.7–14.8
3	46.5	45.0–48.1	45.9	44.4–47.3
2	20.1	18.9–21.3	24.2	23.0–25.5
1	12.2	11.4–13.2	12.6	11.7–13.5
0	5.3	4.8–5.8	3.7	3.2–4.2
Number of sexual partners				
6+	20.6	18.9–22.4	12.1	11.1–13.2

	Males (n=12,494)		Females (n=12,144)	
Variable	**%**	**95% CI**	**%**	**95% CI**
2–5	45.3	44.0–46.7	48.1	46.9–49.3
1	34.1	32.6–35.6	39.8	38.5–41.2
Age of sexual debut				
≤ 12	18.6	17.4–19.9	8.7	7.9–9.6
13–14	35.0	33.7–36.3	34.5	33.2–35.9
15–16	37.5	35.9–39.2	47.8	46.5–49.1
≥ 17	8.9	8.1–9.8	9.0	8.2–9.8

‡Abbreviations: YRBSS: Youth Risk Behavior Surveillance System, DMPA = medroxyprogesterone acetate (i.e., injectable birth control), CI, confidence interval.

‡‡Dual method = condoms plus birth control pills or DMPA

Table 2

Multinomial multivariable logistic regression examining associations with type of contraception use (versus condoms only) at last sexual intercourse, males [a]

Weighted	No method/unsure n = 1,609 OR (95% CI)	Withdrawal only n = 964 OR (95% CI)	Birth control pills only n = 900 OR (95% CI)	DMPA only [b] n = 121 OR (95% CI)	Dual method[c] n = 611 OR (95% CI)
Risk Scale					
0	1.0	1.0	1.0	1.0	1.0
1	1.1 (0.8–1.6)	1.2 (0.7–2.2)	0.9 (0.5–1.8)	3.5 (0.5–22.9)	1.3 (0.7–2.4)
2	0.9 (0.7–1.3)	0.8 (0.5–1.5)	0.9 (0.5–1.6)	2.0 (0.3–12.5)	1.0 (0.6–1.7)
3	1.1 (0.8–1.5)	1.2 (0.7–2.0)	1.2 (0.7–2.0)	4.8 (0.8–27.6)	1.2 (0.7–2.0)
4	2.4 (1.7–3.4)	2.6 (1.5–4.3)	1.4 (0.8–2.4)	7.4 (1.2–46.0)	1.6 (0.9–2.8)
No. of sex partners					
1	1.0	1.0	1.0	1.0	1.0
2–5	0.7 (0.6–0.8)	0.8 (0.6–1.0[e])	0.8 (0.6–1.0[c])	0.9 (0.5–1.5)	1.1 (0.9–1.4)
6+	0.9 (0.6–1.1)	0.9 (0.7–1.3)	1.0 (0.7–1.4)	1.0 (0.4–2.2)	1.1 (0.7–1.7)
Age of sexual debut					
≥ 17	1.0	1.0	1.0	1.0	1.0
15–16	1.1 (0.8–1.4)	1.1 (0.8–1.5)	1.4 (1.0–2.0[e])	1.0 (0.4–2.3)	0.9 (0.6–1.2)
13–14	1.2 (0.9–1.7)	1.0 (0.7–1.6)	1.9 (1.2–2.9)	0.9 (0.3–2.4)	0.7 (0.4–1.1)
≤ 12	2.2 (1.5–3.4)	1.2 (0.8–2.0)	1.3 (0.8–2.3)	1.1 (0.4–3.4)	0.6 (0.4–1.0[d])
Race					
Caucasian	1.0	1.0	1.0	1.0	1.0
African American	1.0 (0.8–1.2)	0.7 (0.6–1.0[d])	0.2 (0.2–0.3)	0.5 (0.3–1.0[e])	0.4 (0.3–0.6)
Hispanic	1.5 (1.3–1.9)	0.8 (0.6–1.1)	0.5 (0.4–0.7)	0.7 (0.3–1.5)	0.5 (0.3–0.8)

NOTE: ORs are adjusted for age at interview, survey year, and all other variables in the table. Survey year was not significant.

[a] Condoms only (reference group): Weighted n = 8,289. Males who responded with “some other (contraception) method” used at last sexual intercourse (total weighted n = 265) were removed from the analyses.

[b] Abbreviations: DMPA = medroxyprogesterone acetate (i.e., injectable birth control), CI, confidence interval; OR, odds ratio.

[c] Dual method = condoms plus birth control pills or DMPA.

[d] With greater precision, the interval does not include 1.00 and is therefore significant.

[e] With greater precision, the interval includes 1.00 and is therefore non-significant.

Table 3

Multinomial multivariable logistic regression examining associations with type of contraception use (versus condoms only) at last sexual intercourse, females [a]

Weighted	No method/unsure n = 1,929 OR (95% CI)	Withdrawal only n = 1,241 OR (95% CI)	Birth control pills only n = 1,550 OR (95% CI)	DMPA only [b] n = 339 OR (95% CI)	Dual method[c] n = 885 OR (95% CI)
Risk Scale					
0	1.0	1.0	1.0	1.0	1.0
1	0.9 (0.6–1.4)	0.9 (0.6–1.5)	0.9 (0.5–1.7)	0.8 (0.3–2.0)	1.5 (0.9–2.6)
2	0.9 (0.6–1.4)	0.8 (0.5–1.2)	1.2 (0.6–2.3)	1.1 (0.6–2.3)	1.1 (0.7–1.9)
3	1.0 (0.7–1.5)	0.9 (0.6–1.3)	1.4 (0.8–2.6)	1.6 (0.8–3.2)	1.4 (0.8–2.4)
4	1.1 (0.7–1.8)	1.1 (0.7–1.8)	1.8 (0.9–3.4)	1.9 (0.9–4.3)	1.4 (0.8–2.3)
No. of sex partners					
1	1.0	1.0	1.0	1.0	1.0
2–5	1.0 (0.8–1.1)	1.5 (1.2–1.8)	1.2 (0.9–1.4)	1.3 (0.9–2.0)	1.2 (0.9–1.5)
6+	1.3 (1.0–1.7[e])	2.9 (2.1–3.9)	1.9 (1.4–2.5)	2.6 (1.6–4.2)	1.3 (0.9–1.9)
Age of sexual debut					
≥ 17	1.0	1.0	1.0	1.0	1.0
15–16	1.5 (1.2–1.9)	1.3 (0.9–1.9)	1.7 (1.3–2.2)	2.3 (0.9–5.8)	1.2 (0.9–1.6)
13–14	2.3 (1.6–3.1)	1.3 (0.9–1.9)	2.4 (1.6–3.5)	3.4 (1.3–8.7)	1.7 (1.2–2.5)
≤ 12	4.5 (3.2–6.4)	1.1 (0.7–1.8)	1.7 (1.0–2.8[d])	2.5 (0.9–7.5)	1.3 (0.8–2.0)
Race					
Caucasian	1.0	1.0	1.0	1.0	1.0
African American	0.8 (0.6–1.0[d])	0.5 (0.4–0.7)	0.4 (0.3–0.5)	0.8 (0.6–1.2)	0.5 (0.4–0.7)
Hispanic	1.7 (1.4–2.2)	1.1 (0.9–1.3)	0.4 (0.3–0.6)	0.6 (0.4–1.0[d])	0.4 (0.3–0.6)

NOTE: ORs are adjusted for age at interview, survey year, and all other variables in the table. Survey year was significant; however, statistical significance was not found for any one type contraception.

[a] Condoms only (reference group): Weighted n = 6,199. Females who responded with "some other (contraception) method" used at last sexual intercourse (total weighted n = 293) were removed from the analyses.

[b] Abbreviations: DMPA = medroxyprogesterone acetate (i.e., injectable birth control), CI, confidence interval; OR, odds ratio.

[c] Dual method = condoms plus birth control pills or DMPA.

[d] With greater precision, the interval does not include 1.00 and is therefore significant.

[e] With greater precision, the interval includes 1.00 and is therefore non-significant.

Table 4

YRBSS sexual behavior survey items

1. During your life, with how many people have you had sexual intercourse? **a.** I have never had sexual intercourse **b.** 1 person **c.** 2 people **d.** 3 people **e.** 4 people **f.** 5 people **g.** 6 or more people
How old were you when you had sexual intercourse for the first time? **a.** I have never had sexual intercourse **b.** 11 years old or younger **c.** 12 years old **d.** 13 years old **e.** 14 years old **f.** 15 years old **g.** 16 years old **h.** 17 years old or older
The last time you had sexual intercourse, did you or your partner use a condom? **a.** I have never had sexual intercourse **b.** Yes **c.** No
The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy? (Select only one response.) **a.** I have never had sexual intercourse **b.** No method was used to prevent pregnancy **c.** Birth control pills **d.** Condoms **e.** Depo-Provera (injectable birth control) **f.** Withdrawal **g.** Some other method **h.** Not sure