Published in final edited form as:

J Pediatr Adolesc Gynecol. 2009 February ; 22(1): 33–39. doi:10.1016/j.jpag.2008.01.075.

Racial/Ethnic Differences in Patterns of Sexual Behavior and STI Risk Among Sexually Experienced Adolescent Girls

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Abstract

Study Objective—Racial/ethnic differences in prevalence and patterns of oral and anal sex were analyzed among girls participating in a microbicide acceptability study.

Design—Cross-sectional analysis

Setting—Recruitment to participate in a 6-month study examining microbicide acceptability was conducted at a school-based health clinic and local colleges in Galveston, Texas and through snowball sampling.

Participants—Sexually experienced girls (n = 202) ages 14 to 21 years of age.

Main Outcome Measures—Girls reported on their demographic and sexual history at the intake interview.

Results and Conclusions—Their mean age was 18.2 years; 26% were white, 43% African-American, and 31% Hispanic. African-American girls were significantly less likely than whites and Hispanics to have had oral sex; no differences were found for anal sex. African-American girls were significantly older than whites and Hispanics when they initiated oral sex. African-American girls had a greater difference between ages of vaginal and oral sex initiation than whites and Hispanics. Oral sex history was associated with a 6-factor increase and anal sex history was associated with a 3-factor increase in the likelihood of an STI history. Future studies should explore these differences in greater depth in order to develop culturally specific STI prevention efforts.

Keywords

adolescent; oral sex; anal sex; race/ethnicity; sexually transmitted infections

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Introduction

The importance of culturally specific interventions to promote positive sexual decision making among adolescents has been well-documented.¹⁻³ In order to design the most effective interventions, we need to go beyond looking at differences in vaginal intercourse and begin investigating the whole range of sexual behaviors. A landmark study found that patterns of sexual behavior differ by race/ethnicity. While white adolescents progressed through a predictable pattern of non-coital sexual behaviors of kissing, above the waist touching, and below the waist touching before engaging in coitus, black adolescents engaged in very little non-coital behaviors before advancing to coitus.⁴ This initial examination of the sequence of adolescent sexual behaviors did not examine oral and anal sex behaviors. Follow-up studies comparing black and white young adults have indicated that oral and anal sexual behaviors are less frequent among blacks than whites and that blacks have been found to initiate oral sex at a later age than whites despite having initiated vaginal sex at an earlier age.^{5, 6} One adolescent-specific study that compared prevalence of oral sex across white versus non-white adolescent boys and girls ages 12 to 16 years found no differences. The non-white group was comprised of various ethnicities, including African-American, Asian-American, Latinos, and other ethnicity, thus perhaps masking the effects of race on prevalence rates for oral sex.⁷ Given the paucity of adolescent research examining the relationship of race/ethnicity to oral and anal sex behavior, the present study sought to investigate racial/ethnic differences in oral and anal sexual behaviors among an ethnically diverse sample enrolled in a microbicide acceptability study.

The objectives were to:

1. Identify rates of oral and anal sex behaviors and assess for differences in rates across race/ethnicity;
2. Determine if there were racial/ethnic differences in the number of oral and anal sex partners;
3. Determine the ages at which this sample first engaged in oral, anal, and vaginal sexual behaviors and assess whether there were differences in ages of initiation by race/ethnicity and differences in length of time between ages of initiation for the different sexual behaviors by race/ethnicity;
4. Determine whether oral and anal sexual behaviors were predictive of STI history and pregnancy history.

Materials and Methods

Sample and Procedure

Two hundred and eight sexually experienced adolescent girls between the ages of 14 and 21 from Galveston, Texas were recruited from school-based teen clinics and local colleges, and through snowball sampling (i.e., girls enrolled in the study referred other girls) to participate in a 6-month study examining the acceptability and use of a microbicide-like product. The results of the present study were taken from data collected at the intake interview which included questions regarding demographics and sexual history. Participants received \$30 for completing the intake interview.

All recruitment and study procedures were approved by the Institutional Review Board at the University of Texas Medical Branch in Galveston. Parental consent and adolescent assent were obtained for girls younger than 18 years, and self-consent was obtained for all girls 18 years or older.

Measures

Demographics—Two questions were asked to determine race/ethnicity. First, participants were asked, “Would you describe yourself as Spanish, Hispanic, or Latino?” Second, participants were asked, “How would you describe your race?” The girls were categorized as either Hispanic (regardless of race), White (Non-Hispanic), African-American, or other.

Sexual History—Girls were asked to state the age in years at which they first had vaginal intercourse and the total number of vaginal partners they have had in their lifetime. For each sexual behavior of interest, giving oral sex, receiving oral sex, and anal sex, girls were first asked if they had ever engaged in the behavior. If they answered yes, then they were asked the total number of lifetime partners and the age at which they initiated the behavior. Girls also were asked to state the number of times in the last three months that they had vaginal intercourse, used a condom, and used alcohol or drugs during intercourse. Finally, they reported whether or not they had ever been pregnant (yes or no) and the number of times they had an STI.

Data Analysis

Data were imported into SAS 9.1 (Cary, NC) for analyses. Because of the limited number of participants ($n = 6$) in the “other” category of the race/ethnicity variable, these participants were dropped from the analyses, yielding a total sample of 202 girls.

For some predictive analyses, we were only interested in whether a girl had oral sex (either giving or receiving), and thus we created the variable, “history of oral sex.” Those with either a history of giving or receiving oral sex were coded as “yes” and those without a history of either were coded as “no.” The variable, “sexual experience,” was also created. Those with *only* vaginal sex experience were coded as “0,” those with vaginal and oral sex but *not* anal sex experience were coded as “1,” and those with vaginal, oral, and anal sex experience were coded as “2.” The percent of vaginal sex episodes in the past three months that were condom protected was calculated by dividing the number of times reported for condom use in the past three months by the number of vaginal sex episodes in the past three months. Those who did not have vaginal sex in the past three months were excluded. The percent of vaginal sex episodes in the past three months during which alcohol or drugs were used was calculated in the same manner. STI history was divided into those with no history of an STI and those with at least one episode of an STI.

Means and frequencies were calculated for demographic variables and the main outcomes. Because age was significantly related to race/ethnicity, it was included as a covariate in predictive models. In order to determine whether there were race/ethnic differences in prevalence of oral and anal sex (objective 1), we conducted separate logistic regression models with race/ethnicity as the predictor, age as the covariate, and type of sexual behavior (e.g., ever given oral sex) as the outcome. To assess whether there were differences in number of oral sex partners and of anal sex partners once a given behavior was initiated (objective 2), we conducted general linear regression models with race/ethnicity as the predictor, age and age of initiation for the specified behavior (e.g., age at which one first gave anal sex) as covariates, and number of partners for the specified behavior (e.g., number of anal sex partners) as the outcome.

To assess whether there were differences in ages of initiation by race/ethnicity and differences in length of time between ages of initiation for the different sexual behaviors by race/ethnicity (objective 3), a repeated measures analysis of variance was conducted using difference in age of oral sex initiation and age of vaginal sex initiation as the repeated measure and race/ethnicity entered as a predictor.

Finally, to determine whether or not oral and anal sex behaviors were predictive of adverse outcomes (objective 4), we conducted separate logistic regressions predicting STI history and pregnancy history. Each type of sexual behavior (e.g., had given oral sex) was entered along with the covariates of age and race/ethnicity into separate logistic regression models to predict STI history. Similar logistic regression models were created to predict pregnancy history.

Results

The mean age of the sample was 18.2 years ($sd = 1.93$). Twenty-six percent ($n = 53$) were white, 43% ($n = 86$) was African-American, and 31% ($n = 63$) Hispanic. White girls (mean = 18.9 years, $sd = 1.80$) were significantly older than the African-American (mean = 18.1 years, $sd = 1.96$) and Hispanic girls (mean = 17.7 years, $sd = 1.83$) ($F = 6.00$, $p < .01$).

Descriptive data for sexual history by race/ethnicity are presented in Table 1. When controlling for age, African-American girls were .07 (CI .03, .18) times as likely as white girls and .28 (.13, .58) times as likely as Hispanic girls to have given oral sex. Hispanic girls were .25 (CI .10, .64) times as likely as white girls to have given oral sex. After controlling for age, African-American girls had a decreased odds of having received oral sex than both white (OR .27; CI .11, .67) and Hispanic (OR .41; .20, .87) girls. White and Hispanic girls did not differ from each other with regard to ever having received oral sex. With respect to anal sex, there were no significant differences across race/ethnicities (Wald chi-square = 2.84, $p = .24$).

Table 2 presents Chi-square analysis of types of sexual behaviors by race/ethnicity. All girls who had anal sex had also had oral sex and thus there were no girls who had only vaginal and anal sex. As can be seen in Table 2, a significantly lower percentage of white girls (9%) had only engaged in vaginal sex compared to that of African-American girls (41%) and Hispanic girls (29%).

Age and race/ethnicity were included as covariates in logistic regression models assessing the relationship between type of sexual behavior (e.g., ever having given oral sex) and history of an STI because they both were significantly related to the outcomes of interest. Age significantly predicted STI and pregnancy history. Older girls were 1.34 (CI 1.13, 1.58) times more likely than younger girls to report having an STI in the past and 1.25 (CI 1.07, 1.45) times more likely than younger girls to report having been pregnant. When controlling for age, African-Americans were 3.58 (CI 1.53, 8.37) times more likely than whites and 2.16 times (CI 1.01, 4.64) more likely than Hispanics to have had an STI in the past. Whites and Hispanics were not significantly different from each other with regard to STI history (OR .60; CI .24, 1.56). African-Americans were 2.64 times (CI, 1.24, 5.64) more likely than whites to have been pregnant but were not significantly different than Hispanics in pregnancy history (OR 1.47, CI .74, 2.89). White and Hispanic girls did not differ from each other with regard to pregnancy history (OR .55; CI .25, 1.25).

The results of the analyses examining the relationship between STI and pregnancy history adjusting for age and race/ethnicity are presented in Table 3. As can be seen in the table, those girls who had had both oral and vaginal sex were 6 times more likely to report having an STI in the past compared to those who only had vaginal sex. Those with oral, vaginal, and anal sex experience were 3 times more likely to report having an STI in the past compared to those who only had vaginal sex.

Given that oral sex likely was not the cause of all these STI infections, we examined whether oral sex was associated with other risk factors by conducting separate logistic regressions models with oral sex (giving or receiving) as the outcome, age and race/ethnicity as covariates, and each risk factor as a predictor (e.g., frequency of sex in the past three months, use of condoms in the past three months, alcohol or drug use during sex in the past three months, age

of sexual initiation, and number of lifetime vaginal sex partners). As can be seen in Table 4, those girls with a higher frequency of sex in the past three months, use of alcohol or drugs during sex in the past three months, and a higher number of lifetime vaginal partners were significantly more likely to have engaged in oral sex than those without these characteristics. Age of vaginal sexual initiation was marginally related ($p < .07$) to history of having oral sex.

Table 5 presents data on the age of initiation for each sexual behavior. After controlling for age, race/ethnic differences were found with regard to age of initiation of giving oral sex ($F = 5.78$, $p < .01$); African-Americans were significantly older than whites and Hispanics when they first gave oral sex. When controlling for age, no significant race/ethnic differences were found for age of initiation of any of the other types of sexual behaviors, receiving oral sex ($F = .40$, $p = .67$), having anal sex ($F = .77$, $p = .47$), having vaginal intercourse ($F = .56$, $p = .57$). After controlling for age and age of initiation of the specific type of sexual behavior (e.g., giving oral sex), there were no significant race/ethnic differences in number of oral-giving ($F = 1.26$, $p = .28$), oral-receiving ($F = 1.67$, $p = .19$), anal ($F = .56$, $p = .58$), or vaginal partners ($F = .71$, $p = .49$).

Of note, 54% of the white, 27% of the African-American, and 51% of the Hispanic girls who had initiated oral and vaginal sex did so in the same year. Repeated measures analysis of variance ($F = 4.74$, $p = .01$) indicated that the difference between the age of vaginal sexual initiation and the age of oral sex initiation (giving or receiving) significantly varied by race/ethnicity with African-Americans having a greater difference between age of oral sex initiation and vaginal sex initiation (mean = 1.14 years, $sd = 1.84$) than whites (mean = .27 years, $sd = 1.20$) and Hispanics (mean = .44 years, $sd = 1.29$).

Discussion

In this sample of sexually experienced adolescent girls, 71% had engaged in oral sex (either gave or received) and 13% had experienced anal sex. These findings are consistent with the prevalence rates found in previous studies with sexually experienced adolescent/young adult females with the range for oral sex being 67 to 97% (median = 72.5%)^{5, 8-12} and the range for anal sex being 15 to 32% (median = 17.5%).^{5, 10, 11, 13} All the girls in our study who had anal sex also had oral sex.

In the present study, racial/ethnic differences were found for oral sex behaviors but not anal sex behaviors, which is consistent with previous studies.^{14, 15} African-Americans girls in our study were less likely to engage in oral sex than white and Hispanic girls. Also the difference in time between initiation for oral sexual behaviors and initiation of vaginal sexual behaviors was much greater for African-American girls; white and Hispanic girls initiated oral and vaginal sexual behaviors within the same year, while African-American girls typically engaged in oral sex one year later than vaginal intercourse. In another recent study, oral sex was found to precede vaginal sex, and this was felt to be related to the fact that oral sex was viewed by some teens as less deviant and therefore, less guilt-provoking.¹⁶ In our sample, it was difficult to ascertain which occurred first for the white and Hispanic girls although there was less than a year difference, but for the African-Americans, the pattern differed. It is difficult to directly compare the study results because the samples differed in demographic characteristics. The sample in Brady et al.'s study¹⁶ included both males and females whereas the present study's sample consisted of only females. Also their sample was younger than and differed in ethnic distribution (40% white, 19% Latino, 17% Asian or Pacific Islander, 4% Black, and 20% multiethnic), and geographical region of the United States from the sample in the present study. In addition, our sample did not include those who had only engaged in oral sex, which may be a different subgroup of adolescents. However, the studies taken together point to the importance

of understanding the complexities of decision-making regarding non-coital behaviors and the timing of initiation among diverse groups of adolescents.

Future research should investigate how racial/ethnic differences develop for some sexual behaviors but not for others. Sexual scripting theory postulates that sexual behaviors, beliefs, and meanings attached to sexual behaviors are constructed through the interaction of the individual and his/her social group.¹⁷ It appears that for adolescents, race/ethnicity may be an important “social group” for determining oral sex behaviors. Previous influential writers of black culture have hypothesized that oral sex is less acceptable among black cultures than it is among white cultures,^{18, 19} thereby lending some support to interpreting our findings within sexual scripting theory. The need to examine sexual scripts and their origins separately for each sexual behavior seems relevant, given our findings of race/ethnic differences for oral sex but not anal sex and given that previous research has found that adolescents' attitudes toward different types of sexual behaviors vary.²⁰

Both oral sex and anal sex were associated with an increased risk of reporting an STI history; the odds of having had an STI increased by a factor of 6 for those who had oral sex and vaginal sex only but only by a factor of 3 for those who had oral, vaginal, and anal sex. Thus, having a history of anal sex did not confer any greater risk for an STI than having a history of oral sex alone among our sample of non-virgin adolescent girls. We believe that the relationship found between oral sex behavior and STI history in the present study is consistent with Problem Behavior Theory, which suggests that problem or non-conventional behaviors cluster together.^{21, 22} In other words, oral sex experience represented a non-conventional behavior that clustered with other risk-taking behaviors. Indeed, girls in our study who had oral sex reported more frequent vaginal sex within the past 3 months, a higher number of lifetime vaginal sex partners, and more frequent use of alcohol or drugs during sex in the past three months than girls without oral sex experience. Thus, sexual behaviors should not be considered in isolation, but rather as a pattern of behaviors that constitute a “sexual lifestyle.”²² It should be noted that those adolescents who had only engaged in oral sex were not included in this sample. It is possible that these adolescents would constitute a group with a different “sexual lifestyle” and thus, they could have a different cluster of risk behaviors. Previous research has found that adolescents who have had oral sex only compared to those who have had oral and/or vaginal sex reported a lower rate of STIs.¹⁶ It may be that the relationships found in the present study would not hold for all adolescent populations. However, it is still important for us as clinicians to identify and address patterns of adolescent sexual behavior.

The present study had several limitations. First, the findings were based on a convenience sample of girls from Galveston, Texas. Thus, the results may not generalize to girls from other geographical regions. Also, our sample only included girls with vaginal sexual experience. Thus, these results are not reflective of those adolescents who have had only oral or anal sex but no vaginal sex. The sample size was relatively small and the study not designed to evaluate racial/ethnic differences in sexual behaviors. Thus, more in-depth studies with larger sample sizes are needed to further understand patterns of sexual behaviors and cultural norms. The data regarding recent sexual history (last three months) were based on retrospective report, and thus, there may be some biases in what girls chose to remember or report. We did not collect information with regard to other non-coital behaviors such as kissing, breast-touching, or outer course (e.g., masturbation of or by a partner) and thus were not able to examine where oral and anal sex fits in with these behaviors. For girls who reported first engaging in certain sexual behaviors at the same age (e.g., oral and vaginal sex), we were unable to distinguish which behavior occurred first and could not specifically assess the sequence of sexual behaviors across race/ethnicities. Lastly, when assessing whether the pattern of sexual behaviors differed for the three race/ethnicities, we could not include those girls who would, but had not yet initiated oral or anal sex. However, only 5 (9%) of the white girls and 29% of the Hispanic

girls had not had oral sex whereas 41% of the African-American girls had not had oral sex. The reported difference between the age of vaginal sex initiation and oral sex initiation was greater for African American girls than white and Hispanic girls, and these relationships would likely be supported to a greater degree if data were collected at a later age when all participants who would have engaged in oral sex had done so.

Conclusion

We found that adolescent girls engage in a range of sexual behaviors, with cultural differences in their choices of which behaviors to engage in and when. Understanding the influence of cultural/social mechanisms on patterns of sexual behavior, rather than isolated behaviors (i.e., vaginal intercourse) may prove helpful when designing culturally-specific STI prevention efforts. Lastly, although vaginal sex poses a much greater risk for infection of an STI than oral sex, our findings indicated that sexually experienced girls who engaged in oral sex were likely to be engaging in additional risk behaviors and had greater rates of STIs. Such findings again highlight the importance of examining patterns of adolescent behavior, and viewing sexual behavior within the larger context of the adolescent's life.

Acknowledgements

We would like to thank The Teen Health Center, Inc and Galveston College for helping in the recruitment phases of this study. We also would like to acknowledge our research team (Elissa Brown, Stephanie Ramos, Jennifer Oakes, E. Alexandra Zubowicz) for their outstanding work in collecting and managing the data. Finally, we wish to thank all the girls for their participation in this research study.

Sources of Support: Support was received from the National Institute of Child Health and Human Development (R01 HD4015101) and the National Institutes of Allergy and Infectious Diseases (U19 A161972, and N01 A150042) of the National Institutes of Health. It was also supported in part by the General Clinical Research Center (GCRC) at the University of Texas Medical Branch at Galveston funded by a grant M01RR00073 from the National Center for Research Resources, NIH, USPHS.

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Table 1

Prevalence of STI, pregnancy, oral sex, and anal sex and number of vaginal, oral, and anal sex partners for total sample and by race/ethnicity

	Total Sample N = 202	White N = 53	African American N = 86	Hispanic N = 63
	n (%)	n (%)	n (%)	n (%)
Ever had an STI	59 (29)	11 (21)	34 (40)	14 (23)
Ever been pregnant	83 (41)	17 (32)	42 (49)	24 (38)
Ever given oral sex	100 (50)	45 (85)	23 (27)	32 (52)
Ever received oral sex	135 (67)	45 (85)	47 (55)	43 (69)
Ever given or received oral sex	143 (71)	48 (91)	51 (59)	44 (71)
Ever had anal sex	26 (13)	11 (21)	7 (8)	8 (13)
Lifetime # of vaginal sex partners				
1	43 (21)	10 (19)	16 (19)	17 (27)
2	38 (19)	7 (13)	19 (22)	12 (19)
3 or more	121 (60)	36 (68)	51 (59)	34 (54)
Lifetime # of oral (giving) sex partners				
0	101 (50)	8 (15)	63 (73)	30 (48)
1	41 (20)	12 (23)	12 (14)	17 (27)
2 or more	59 (29)	32 (60)	11 (13)	16 (25)
Missing	1 (1)	1 (2)		
Lifetime # of oral (receiving) sex partners				
0	66 (33)	8 (15)	39 (45)	19 (30)
1	51 (25)	11 (21)	19 (22)	21 (33)
2 or more	85 (42)	34 (64)	28 (33)	23 (37)
Lifetime # of anal sex partners				
0	176 (87)	42 (79)	79 (92)	55 (87)
1 or more	26 (13)	11 (21)	7 (8)	8 (13)

Table 2

Chi-square analysis of types of sexual behaviors by race/ethnicity

	Total Sample (N = 202)	White (N = 53)	African-American (N = 86)	Hispanic (N = 63)
	n (%)	n (%)	n (%)	n (%)
Vaginal Sex Only	58 (29)	5 (9)	35 (41)	18 (29)
Vaginal and Oral Sex	118 (54)	37 (70)	44 (51)	37 (59)
Vaginal, Oral, and Anal Sex	26 (13)	11 (21)	7 (8)	8 (13)

 $\chi^2=17.17$, $p = .002$

Table 3

Adjusted Odds Ratios (OR) and Confidence Intervals (CI) assessing the relationship between type of sexual behavior and having had an STI in the past and the relationship between type of sexual behavior and having ever been pregnant

	Adjusted OR (95% CI) for STI history ^a	Adjusted OR (95% CI) for Pregnancy History ^a
Ever given oral sex	4.78 (1.10-1.62) **	1.18 (.60-2.34)
Ever received oral sex	6.36 (2.45-16.49) **	2.20 (1.08-4.49) *
Ever given or received oral sex	6.12 (2.28-16.41) **	1.83 (.89-3.76)
Ever had anal sex	2.95 (1.17-7.42) *	1.71 (.71-4.13)

^a Analyses adjusted for age and race/ethnicity.

*
p < .05.

**
p < .001.

Table 4

Adjusted Odds Ratios (OR) and Confidence Intervals (CI) examining the relationship between risk behaviors and history of ever having oral sex (giving or receiving), controlling for age and race/ethnicity

	Adjusted OR (95% CI) for oral sex history ^a
Frequency of vaginal sex in past three months	1.03 (1.01, 1.06) **
% vaginal sex acts in past three months that were condom protected	.52 (.21, 1.21)
% vaginal sex acts in past three months during which alcohol or drugs were used	5.43 (1.07, 27.59) *
Age of vaginal sexual initiation	.76 (.57, 1.02)
Lifetime number of vaginal sex partners	1.19 (1.04, 1.37) **

^a Analyses adjusted for age and race/ethnicity.

* p < .05.

** p < .01.

Table 5

Age of initiation for each type of sexual behavior for total sample and by race/ethnicity

	Total Sample (N = 202)	White (N = 53)	African-American (N = 86)	Hispanic (N = 63)
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Age of first vaginal intercourse	14.99 ± 1.51	15.42 ± 1.57	14.84 ± 1.43	14.84 ± 1.52
Age of first oral (giving) sex	16.16 ± 1.71	15.91 ± 1.65	16.91 ± 1.76	15.97 ± 1.67
Age of first oral (receiving) sex	15.90 ± 1.75	16.13 ± 1.78	16.14 ± 1.59	15.41 ± 1.81
Age of first oral (giving or receiving) sex	15.69 ± 1.67	15.67 ± 1.68	16.06 ± 1.59	15.31 ± 1.68
Age of first anal sex	17.42 ± 1.58	17.91 ± 1.51	17.43 ± 1.13	16.75 ± 1.91