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## Pregnancy, Penile-anal Sex and Other Sexual Behaviors in the United States, 2011–2015

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### Abstract

We used US national survey data to examine sexual behavior by pregnancy status and found that, overall, pregnant women did not differ from non-pregnant women in penile-anal sex and associated condom use. Compared to non-pregnant women, pregnant women had lower or similar reports of other sexual behaviors.

### Short Summary:

Overall, in the US pregnant women did not differ from postpartum and other women in reported recent penile-anal sex.

### Keywords

pregnancy; sexual behavior; penile-anal sex; STD risk

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A recent study of HIV serodiscordant couples in Africa examined HIV transmission and found significant differences in the probability of transmission per sex act for women by pregnancy status.[1] Specifically, they found that sexual activity, including condomless sex acts, declined during pregnancy (from early pregnancy, to late pregnancy and postpartum); yet, the transmission probability per sex act increased from non-pregnancy, early pregnancy, late pregnancy and postpartum with a significantly higher risk of acquiring HIV during late pregnancy and postpartum. [1] Another study focusing on 20 cities found that penile-anal sex may be a substantial factor in HIV transmission among some women, regardless of pregnancy status, in the United States (US).[2] Thus, it is important to examine sexual behavior during pregnancy to determine if there are any changes that may impact the transmission of HIV or other sexually transmitted diseases (STD). However, few studies have examined the prevalence of sexual behaviors, especially behaviors other than vaginal sex acts, among pregnant women in the US. Thus, the purpose of this study was to examine recent penile-anal sex as well as other sexual behaviors by pregnancy status, including post-

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partum and non-pregnant women. A secondary objective was to examine potential differences by race/ethnicity and age.

We used data from the 2011–15 National Survey of Family Growth (NSFG) including 11,300 women aged 15–44 years with a 72% response rate for this group. NSFG is a US household-based survey that includes both computer assisted personal interviews (CAPI) and audio computer assisted self-interview (ACASI). Demographics and information on pregnancy status were collected via CAPI. All sexual behavior variables used in this analysis were collected via ACASI. NSFG obtained informed consent, including parental consent for those under age 18 years, and was approved by a Centers for Disease Control and Prevention (CDC) IRB. Additional information on the sampling frame and methods has been published elsewhere.[3]

For this analysis, we included data only from women who had any type of sex (vaginal, oral or penile-anal) in the past 12 months (hereafter referred to as “sexually active” women, n=9006). Women were asked about all pregnancies and were then categorized into 4 groups based on pregnancy status at the time of interview: 1) early pregnancy (first trimester); 2) late pregnancy (second and third trimester); 3) postpartum (<=6 months from delivery); and 4) “other women” who had not experienced a pregnancy in the past 12 months. Additionally, we included the following demographics: race/ethnicity (Hispanic/Latina, non-Hispanic white, non-Hispanic black, and non-Hispanic other); and age (coded as 15–24 and 25–44 years). We included several different sexual behavior variables with male sex partners as outcomes: had oral sex (gave or received oral sex in the past 12 months); had penile-anal sex (past 12 months); had > 1 oral sex partner (past 12 months); had > 1 vaginal sex partner (past 12 months); had sex with partner who engaged in STI/HIV risk behaviors in past 12 months (including had sex with both men and women; had another partner around the same time; injected drugs; and/or was living with HIV); and among those who had the corresponding type of sex, used condom at last vaginal, oral or penile-anal sex (respectively). We planned to include had > 1 penile-anal sex partner; however, we found small numerators (i.e., very few women reported this) resulting in estimates that were not stable.

We used SAS-callable (Release 9.3, SAS Institute, Cary, North Carolina) SUDAAN (Release 11.0.1, Research Triangle Institute, Research Triangle Park, North Carolina) for data penile-analyses to account for complex sampling methods (e.g., stratification and clustering). Data were weighted to represent sexually active women aged 15–44 years living in U.S. households. First, we calculated Wald’s chi-square tests to compare sexual behaviors by pregnancy status. Next, given small sample sizes, we collapsed pregnancy status at time of interview into pregnant (first, second or third trimester) and not pregnant (post-partum or other). We then examined the association between pregnancy status and sexual behaviors by race/ethnicity and age, separately, using Wald’s chi-square tests.

For analyses, we identified 9006 sexually active women whose pregnancy status was categorized as follows: 136 early pregnancy, 325 late pregnancy, 576 post-partum, and 7969 other women (no pregnancy in past 12 months). We found no difference in penile-anal sex by pregnancy status with 13.7% (8.6–21.1) of early pregnancy, 17.0% (12.7–22.4) of late

pregnancy, 23.3% (18.5–28.8) of post-partum, and 21.3% (20.0–22.7) of other women reporting the behavior in the past 12 months (Table 1). Similarly, condom use at last penile-anal sex did not differ by pregnancy status and ranged from 16.1–24.7% across the groups. We did find some significant differences for other sexual behaviors. Women who were in early (6.7, 95% CI, 3.4–12.6) or late pregnancy (7.9, 95% CI, 5.0–12.3) had significantly lower reports of condom use at last vaginal sex than post-partum (27.8, 95% CI, 23.1–33.2) and other sexually active women (23.3, 95% CI, 18.5–28.8;  $P < .001$ ). Also, women who were in late pregnancy (11.0, 95% CI, 7.4–16.1) had significantly lower reports of having multiple vaginal sex partners in the past 12 months than women who were not pregnant in the past 12 months (18.2, 95% CI, 17.0–19.5;  $P = .003$ ). Similarly, women who were in late pregnancy (5.4, 95% CI, 3.2–9.0) had significantly lower reports of having multiple oral sex partners in the past 12 months than sexually active women who were not pregnant in the past 12 months (14.2, 95% CI, 13.2–15.3;  $P < .001$ ). We found no differences in reports of oral sex or having sex with partner who engaged in STI/HIV risk behaviors by pregnancy status.

When we examined sexual behaviors for pregnant vs. not pregnant (at the time of interview) by demographics, we found some significant differences for penile-anal sex. Among non-Hispanic white women, pregnant women (early/late pregnancy) had significantly lower reports of penile-anal sex in the past 12 months (15.0%, 95% CI, 10.2–21.6) than non-pregnant women (post-partum/other) (22.6%, 95% CI, 21.0–24.3). Among 25–44 year old women, those who were pregnant had significantly lower reports of penile-anal sex in the past 12 months (14.3%, 95% CI, 10.5–19.2) than non-pregnant women (20.5%, 95% CI, 19.0–22.1).

We also found that many of the significant differences in sexual behaviors by pregnancy status were among non-Hispanic white women and those 25–44 years. For instance, as compared to non-Hispanic white women who were not pregnant at time of interview, non-Hispanic white women who were pregnant had significantly higher reports of having oral sex in the past 12 months, but lower reports for penile-anal sex, having > 1 oral sex partner, having sex with a partner who engaged in STI/HIV risk behaviors and using a condom at last vaginal sex (Supplemental Digital Content 1). Among Hispanic and non-Hispanic black women, women who were pregnant had significantly lower reports of using a condom at last vaginal sex than women who were not pregnant at the time of interview. Among non-Hispanic black women, women who were pregnant had significantly lower reports of having multiple oral sex partners in the past 12 months than women who were not pregnant at the time of interview. Finally, among women aged 25–44 years, women who were pregnant had significantly lower reports than other women for: had oral sex, had penile-anal sex, used a condom at last vaginal sex, used a condom at last penile-anal sex, had > 1 vaginal sex partners, had > 1 oral sex partners, and had a partner who engaged in STD/HIV risk (Supplemental Digital Content 2). Among 15–24 year old women, those pregnant at time of interview had lower reports of using a condom at last vaginal sex compared to other women.

Our findings from the US were consistent with previous research that has found a decline in sexual activity during pregnancy in other countries.[4–7] Specifically, we found that women who were in late pregnancy (second or third trimester) had lower reports of sexual activity including having multiple vaginal or oral sex partners in the past 12 months. Additionally,

we found that pregnant women had lower reports of condom use at last vaginal sex which was consistent with a study in Kenya that found low levels of condom use among pregnant women.[4] Finally, we did not find any difference in reports of having a sex partner who is at STI/HIV risk among pregnant, postpartum and other women. A previous study in Uganda that interviewed sexually active women and their spouses found no difference in spouses reporting a non-marital partner for pregnant, lactating or other women.[8, 9] We also found no difference in reported penile-anal sex or condom use at last penile-anal sex among pregnant, postpartum and other women. It is worth noting that reports of penile-anal sex may occur less frequently in the general population (the current study) than in high risk populations.[2] Finally, differences in behavior for pregnant and non-pregnant women were most commonly identified for non-Hispanic white women and women 25–44 years old.

Our study has some limitations. The timeframe of sexual behavior items we examined was the past 12 months; thus, some of the behavior reported by pregnant or postpartum women may have occurred before pregnancy. Sexual behavior data were self-reported; however, use of ACASI should have reduced social desirability bias. Finally, our sample sizes for women in early and late pregnancy at time of interview were small; therefore, we were not able to examine behaviors for these groups separately by demographics.

In the US, pregnant women tended to have similar or less sexual activity when compared to postpartum and other women. Additionally, they were no more likely to engage in behaviors that may place one at increased STI/HIV risk including penile-anal sex or having a sex partner who is at increased behavioral risk.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Reported sexual behaviors among sexually active women by pregnancy status at the time of interview, 2011–15 (n=9006)

Sexual behavior (past 12 months)	Early pregnancy (n=136)		Late pregnancy (n=325)		Postpartum (n=576)		Other women (n=7969)		P Value
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	
Had penile-anal sex <sup>1</sup>	13.7	(8.6–21.1)	17.0	(12.7–22.4)	23.3	(18.5–28.8)	21.3	(20.0–22.7)	0.062
Had oral sex <sup>1</sup>	85.7	(77.2–91.3)	85.2	(80.0–89.2)	85.4	(81.1–88.9)	85.0	(83.7–86.2)	0.994
Used condom, last penile-anal sex <sup>2</sup>	16.1	(7.2–32.1)	17.3	(8.3–32.7)	24.7	(17.3–34.1)	20.7	(18.6–22.9)	0.539
Used condom, last vaginal sex <sup>2</sup>	6.7	(3.4–12.6)	7.9	(5.0–12.3)	27.8	(23.1–33.2)	26.6	(25.1–28.1)	< .001
Used condom, last oral sex <sup>2</sup>	--	--	2.0	(0.9–4.3)	5.8	(4.0–8.1)	5.5	(4.8–6.4)	< .001
Had > 1 vaginal sex partners	14.4	(9.0–22.4)	11.0	(7.4–16.1)	14.3	(10.9–18.6)	18.2	(17.0–19.5)	0.003
Had > 1 oral sex partners <sup>1</sup>	10.6	(6.0–17.9)	5.4	(3.2–9.0)	8.4	(6.2–11.2)	14.2	(13.2–15.3)	< .001
Had sex with partner who engaged in STI/HIV risk behaviors <sup>3</sup>	10.4	(5.5–18.7)	7.2	(4.2–12.1)	10.8	(7.8–14.9)	12.5	(11.6–13.4)	0.055

Note. Sample sizes differ for each sexual behavior given missing values. -- = data were suppressed because of small numerator.

<sup>1</sup> Included gave and/or received oral sex.

<sup>2</sup> Of respondents who ever engaged in the corresponding sexual behavior in their lifetimes.

<sup>3</sup> Composite variable that included having a partner who engaged in 1 or more of the following behaviors: had sex with both men and women; had another partner around the same time; injected drugs; and/or was living with HIV.