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Sexual Desire and Hormonal Contraception

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Abstract

Objective—To examine the effect of hormonal contraception on sexual desire.

Materials and Methods—We performed a cross-sectional analysis of 1,938 of the 9,256 participants enrolled in the Contraceptive CHOICE Project. This subset included participants enrolled between April and September 2011 who completed a baseline and six-month telephone survey. Multivariable logistic regression was used to assess the association between contraceptive method and report of lacking interest in sex, controlling for potential confounding variables.

Results—More than one in five participants (23.9%) reported lacking interest in sex at 6 months after initiating a new contraceptive method. Of 262 copper IUD users (referent group), 18.3% reported lacking interest in sex. Our primary outcome was more prevalent in women who are young (<18 years: adjusted odds ratio (OR_{adj})=2.04), black (OR_{adj}=1.78), and married or living with a partner (OR_{adj}=1.82). Compared to copper IUD users, participants using depot medroxyprogesterone (OR_{adj}=2.61, 95% confidence interval (CI)=1.47-4.61), the vaginal ring (OR_{adj}=2.53, 95% CI=1.37-4.69), and the implant (OR_{adj}=1.60, 95% CI=1.03-2.49) more commonly reported lack of interest in sex. We found no association between use of the hormonal IUD, oral contraceptive pill, and patch and lack of interest in sex.

Conclusion—CHOICE participants using depot medroxyprogesterone acetate, the contraceptive ring, and implant were more likely to report a lack of interest in sex compared to copper IUD users. Future research should confirm these findings and their possible physiological basis. Clinicians should be reassured that most women do not experience reduced sex drive with the use of most contraceptive methods.

Introduction

About 62% of women of reproductive age in the United States use some form of contraception to prevent unintended pregnancy (1). Despite high rates of contraceptive use, six-month discontinuation rates are high, varying from 18% to 57% for oral contraceptives pills (OCPs) (2,3). Unintended pregnancy often follows contraceptive discontinuation, because many discontinuers do not subsequently obtain another effective contraceptive

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method (4). Side effects are cited as the most common reason for stopping contraceptive use (4–6); women who report side effects with OCPs are approximately twice as likely to discontinue use than are women who report no side effects (5).

One in five OCP users report negative sexual side effects, and approximately half discontinue their method due to these side effects, which include sexual interest and enjoyment (6). At present, there are conflicting data regarding a link between hormonal contraceptives and libido. OCPs have been studied extensively in this regard. A systematic review of the literature found that sex drive is unaffected in most women taking OCPs; 3.5% of women taking OCPs reported a decrease in sexual desire, 12.0% reported an increase, and 84.6% reported no change (7). However, the effects of other forms of hormonal contraception on sex drive have not been studied as comprehensively as OCPs (8).

The purpose of this analysis was to examine differences in “interest in sex” with use of contraceptive methods. Our hypothesis was that use of hormonal methods is not associated with reduced sexual desire compared to copper intrauterine device (IUD) use.

Materials and Methods

We performed a cross-sectional analysis of a six-month survey from the Contraceptive CHOICE Project, a prospective cohort study of 9,256 women in the St. Louis region. The primary goal of CHOICE was to remove barriers to all contraceptive methods and promote the use of long-acting reversible contraceptive (LARC) methods as a means of reducing unintended pregnancies. A detailed description of the methodology of the CHOICE Project has previously been described (9). We provide a brief description of the project as a whole and analyses relevant to the present study.

Study participants in the CHOICE Project were a convenience sample of women in the St. Louis region enrolled between 2007 and 2011. Participants were recruited from ambulatory care clinics and the two main abortion facilities in the region. Recruitment was conducted via general awareness through provider referral, newspaper reports and advertisements, study flyers, and word of mouth. Eligible participants met the following inclusion criteria: 1) age 14–45 years old; 2) no desire for pregnancy for at least 12 months; 3) willing to switch or initiate a new contraceptive method; 4) sexually active with a male partner or anticipating sexual activity in the next six months; 5) residing in St. Louis city or county; and 6) English- or Spanish-speaking. Women were excluded if they had a tubal ligation or hysterectomy. The CHOICE protocol was approved by the Washington University in St. Louis School of Medicine Human Research Protection Office prior to recruitment.

CHOICE participants were read a brief script at the time of screening for study eligibility that first mentioned the most effective methods of contraception: LARC methods (intrauterine device (IUD) and implant). Participants then underwent contraceptive counseling that included information about all Food and Drug Administration (FDA)-approved reversible contraceptive methods. Participants were offered no-cost reversible contraception for 2–3 years, depending on the date of enrollment. Each participant provided written informed consent. Participants completed a face-to-face, standardized baseline

survey and were subsequently followed with telephone interviews at three and six months. Participants were then followed every six months for the duration of follow-up.

Our primary outcome for this analysis was self-reported lack of interest in sex reported at the 6-month telephone survey. This was not an original primary or secondary outcome of CHOICE. The study team added questions in the final six months of enrollment to assess the association of contraceptive method use with sexual desire. Beginning April 2011, a revised baseline and six-month follow-up telephone survey was implemented. Participants enrolled after April 11 were asked the following question at baseline and six months: “During the past 6 months, has there ever been a time of several months or more when you lacked interest in having sex?” Participants who enrolled in CHOICE prior to April 2011 but had not yet completed their six-month survey were asked this question at the six-month follow-up time point. The question was derived from the Natsal-SF questionnaire (10). A subject who responded “yes” to the question was considered to experience lack of interest in sex. Lack of interest in sex at six months was assessed stratified by contraceptive method chosen at enrollment into CHOICE. We considered the copper IUD group the control or referent group, as it is the only non-hormonal contraceptive method included in this analysis, and there has been no evidence to suggest that the copper IUD is associated with altered libido (11).

Other questions regarding sexual function included: “During the past 6 months, has there ever been a time of several months or more when you . . .” 1) “experienced physical pain during intercourse?” 2) “did not find sex pleasurable (even if it was not painful)?” 3) “had trouble lubricating?” and 4) “felt anxious just before sex about your ability to perform sexually?” Participants who responded to these questions at their six-month follow-up phone interview were included in our analysis; participants whose contraceptive method was not recorded or who were not using a contraceptive method were excluded.

Demographic characteristics of the study participants were described using frequencies and percentages. We analyzed variables described in the literature as potentially having an effect on libido including age, race, Hispanic ethnicity, marital status, parity, socioeconomic status, depression, comorbidities, general health, body mass index (BMI), history of sexually transmitted infection (STI), and education level (12–15). Variables that were associated with lack of interest in sex in our bivariate models were investigated as possible confounders. Multivariable logistic regression was used to assess the association between contraceptive method and lack of interest in sex, controlling for potential confounders and other clinically important covariates.

We also performed a separate analysis on a subset of women enrolled after April 2011 to assess whether reporting a lack of interest in sex at baseline (prior to starting their CHOICE contraceptive method) was associated with lack of interest in sex reported at six months. We specifically focused on the subset of participants who were either using no method of contraception or withdrawal, as these non-hormonal methods should not influence sexual desire. Results of the multivariable analysis in this subset were compared to the results of our cross-sectional analysis.

All analyses were performed using SPSS 22 (SPSS Inc. Chicago, IL). The significance level (alpha) was set at $P < 0.05$. Given a sample of more than 250 copper IUD users, we had over 80% power to detect a two-fold difference in loss of interest in sex in all other contraceptive subgroups. This research was approved by the Washington University in St. Louis Institutional Review Board under ID # 201101982.

Results

Among 9,256 participants enrolled in the Contraceptive CHOICE Project between August 2007 and September 2011, 2,038 participants had been asked the primary outcome question in the six-month survey. Of those, 100 participants were excluded because they had no contraceptive method recorded. Thus, a total of 1,938 participants were included in this cross-sectional analysis (Figure 1). Table 1 presents baseline characteristics of the analytic sample by contraceptive method selected at the time of enrollment in CHOICE. The mean age of the participants was 25 years, 50% were Black, 59% were single or never married, and 51% were nulliparous. Thirty-six percent received public assistance; 68% rated their health as “excellent” or “very good,” and the average BMI was 27.7 kg/m². Participants chose the following contraceptive methods: 43% levonorgestrel IUD, 23% subdermal contraceptive implant, 14% copper IUD, 7% OCPs, 6% DMPA, 5% contraceptive vaginal ring, and 2% contraceptive patch.

Bivariate analysis of lacking interest in sex at six months by selected demographic characteristics is provided in Table 2. Among all 1,938 participants surveyed at 6 months, 23.9% reported lacking interest in sex for several months or more. Eighteen percent of copper IUD users (reference group) reported lack of interest in sex, compared to 37.3% in DMPA users. Black women (OR=2.23, 95% confidence interval (CI)=1.77-2.80) and women who were married or living with a partner (OR=1.51, 95% CI=1.21-1.88) were more likely to experience lack of interest in sex (Table 2). Women with more children, depression, poorer health, high BMI, and history of STI were more likely to experience lack of interest in sex as well. Low socioeconomic status, as measured by use of public assistance, trouble paying basic expenses, and low education level, was also positively associated with lack of interest in sex at six months. Age, Hispanic ethnicity, and history of comorbidities were not found to be associated with sexual desire. In our unadjusted (crude) analysis, DMPA injection (OR=2.65) and the subdermal implant (OR=1.79) were associated with lack of interest in sex compared to the copper IUD users.

Table 2 also presents the multivariable analysis of the association of contraceptive method and reported lack of interest in sex at six months, controlling for the potential confounding variables. Age was associated with lack of interest in sex: younger women (<18 years: OR_{adj}=2.04, 95% CI=1.18-3.5; 18-20 years: OR_{adj}=1.5, 95% CI=1.08-2.22) were more likely to report lack of interest in sex at six months compared to women in the 21-25 year age group. Women who were black (OR_{adj}=1.78, 95% CI=1.33-2.40) and who were married or living with a partner (OR_{adj}=1.82, 95% CI=1.38-2.40) were more likely to experience a loss of desire when compared to white women and women who were single. Parity, depression, use of public assistance, general health, BMI, and history of STI were not significantly associated with lack of interest in sex in the final model.

Users of the DMPA injection ($OR_{adj}=2.61$, 95% CI=1.47-4.61), the vaginal ring ($OR_{adj}=2.53$, 95% CI=1.37-4.69), or the implant ($OR_{adj}=1.60$, 95% CI=1.03-2.49) were more likely to report lacking interest in sex at six months compared to copper IUD users (Figure 2). When we limit our analysis to only women who continued their method for the entire 6 months and responded to our 6-month sexual desire question ($N=1794$), the associations of method and reporting a lack of interest in sex were as follows: DMPA: $OR_{adj}=3.5$, 95% CI 1.91-6.55; ring: $OR_{adj}=2.9$, 95% CI 1.46–5.68; implant: $OR_{adj}=1.9$, 95% CI 1.18-3.08. Responses to two other sexual function questions support the DMPA association with sexual function. Twenty percent of DMPA users reported not finding sex pleasurable compared to 11.9% copper IUD users ($p=0.04$). Of DMPA users, 10.9% reported feeling anxious before sex compared to 6.1% of copper IUD users, but this difference is not statistically significant ($p=0.13$).

In our subset of CHOICE participants that had our primary outcome question asked at baseline and six months ($N=799$), 560 women were using either no contraceptive method or withdrawal at baseline. In this group, 42.0% (235/560) of participants using no contraceptive method or withdrawal prior to CHOICE enrollment reported a lack of interest in sex for several months or more. Table 3 presents the multivariable analysis of these 560 participants. Lack of interest in having sex at baseline was strongly associated with lack of interest in having sex at six months in both bivariate ($OR=4.22$, 95% CI=2.77-6.43) and multivariable ($OR_{adj}=3.98$, 95% CI=2.58-6.14) analyses. Black race, high parity, and use of public assistance were significantly associated with lack of interest in sex in the bivariate analyses and were included in the final multivariable analyses; however, none of these characteristics was significant in the final model. Of contraceptive methods, only DMPA was significantly associated with lack of interest in sex in the bivariate analysis ($OR=2.64$, 95% CI=1.12-6.23); however, statistical significance was not achieved in the multivariable model ($OR_{adj}=1.99$, 95% CI=0.79-5.05).

Discussion

Among CHOICE participants, more than one in five reported a lack of interest in sex for several months or more when asked at their 6-month follow-up survey. We found that women using DMPA injections, the contraceptive ring, and the implant were more likely to report a lack of interest in sex compared to copper IUD users. We found no association between lack of libido and the hormonal IUD, oral contraceptive pill, and contraceptive patch compared to copper IUD users.

In our analysis of the subset of participants using no contraceptive method or withdrawal who completed the baseline survey, lack of interest in sex for several months or longer was a common finding (>40%). In a 1992 national probability sample, Laumann and colleagues noted sexual dysfunction in 43% of women (15). In a more recent prospective cohort, Gracia and colleagues noted that 27% of women ages 30-47 years reported decreased libido (13). It is intriguing that fewer participants reported lack of sexual desire at our six-month follow-up after beginning a new contraceptive method compared to baseline (24% versus 42%). Some reports have suggested that contraceptive use may have protective effects on libido, because it may free women from the fear of having an unwanted pregnancy (8).

Our finding that the DMPA injection is associated with lack of sexual desire when compared to use of the copper IUD is not unprecedented. Some studies have found no change or even improvements in libido in women who use DMPA injections (16,17); however, decreased libido is a common complaint among DMPA users, and progestins have been observed to decrease interest in sex (18). Similarly, the implant has been associated with decreased libido (19,20), and reduced sex drive has been observed as a significant cause for implant discontinuation (20,21). We also noted decreased libido with the contraceptive vaginal ring compared to the copper IUD. In spite of studies that have found improvements in libido in vaginal ring users (22,23), the ring has also been previously associated with decreased sex drive (24,25), consistent with our findings.

Lack of interest in sex in implant and DMPA users may be related to the hormonal composition of these methods. The implant and DMPA injection are the only two contraceptive methods included in this study that release progestins systemically. While there is conflicting evidence concerning a link between progestins and libido (18,26), there is some evidence to suggest that estrogens play an essential role in female sexuality. Prior research has found that declining sexual functioning in women is most closely related to declining estrogen levels (27), and exogenous estrogens have been shown to be an effective treatment for low libido and hypoactive sexual desire disorder (28,29). Systemic progestins may be associated with loss of sexual desire due to suppression of ovarian function and endogenous estrogen production.

In our cohort, young age (< 21 years) was associated with lack of interest in sex compared to women 21-25 years of age. The literature is inconsistent with respect to the effect of age on libido (12,14,15). Our unadjusted findings on the relationship between race, parity, socioeconomic status, education level, depression, general health, BMI, and history of STI were all consistent with the literature (12–15); however, only race was still associated with lack of interest in sex in the adjusted model. We did not find a relationship between ethnicity and libido as previously observed (15), likely due to our small number of Hispanic participants.

In our subset of women with baseline and six-month survey data who were using no contraceptive method or withdrawal prior to CHOICE enrollment, reporting a lack of interest in sex at baseline was strongly associated with lack of interest in sex at six months. We could not confirm our cross-sectional analysis results in this subset largely due to small sample size (41 DMPA users, 119 implant users, and 30 ring users). There was a two-fold increase in reporting a lack of interest in sex with DMPA; however, this estimate lacked statistical significance.

The strengths of our study include a relatively large sample size and the diversity of participants. However, our study also has several limitations. Because our primary outcome question was not pre-specified in the original protocol and was introduced late in the recruitment for the CHOICE Project, our analytic sample was much smaller than the total CHOICE cohort. We also had a very limited sample of participants who completed our primary outcome question at baseline, which made longitudinal analysis of sexual desire difficult. Lack of a control group using no contraception was another limitation. In addition,

we did not have the complete Natsal-SF questionnaire to be able to produce a more nuanced measure of sexual functioning, and we did not assess increases in sexual desire with contraceptive use. Additionally, due to the limitations of CHOICE forms and questionnaires, we were unable to analyze other aspects of sexual function (e.g. orgasm, satisfying sexual events, etc.) and correlates of dysfunction such as previous negative sexual experiences (12,13,15). We also were unable to quantify other social circumstances that may have an effect on libido, such as physical illness, relationship status, or socioeconomic instability.

In our cross-sectional analysis, use of DMPA, ring, and implant were associated with lack of interest in sex compared to the copper IUD; however, confirmation of our findings is warranted. We found no significant association between loss of sexual desire and OCPs, the hormonal IUD, and the patch. Clinicians should be reassured that most women using modern contraceptive methods do not experience loss of sexual desire.

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Figure 1.
Flow diagram showing selection process for analysis cohort.

Figure 2. Percentage of participants reporting lack of interest in sex at 6-month follow-up. Copper intrauterine device (IUD) (referent group) and contraceptive methods with significant results are shown. DMPA, depot medroxyprogesterone acetate.

Table 1
 Characteristics of Total Sample and Stratified by Contraceptive Method Chosen at Enrollment in CHOICE.

Characteristics	Methods					
	Total Sample (N = 1938)	Copper IUD (N = 262)	LNG-IUD (N = 838)	Implant (N = 454)	DMPA (N = 110)	PPR (N = 274)
Age, years (%)						
<18	100 (5.2)	5 (1.9)	20 (2.4)	59 (13.0)	8 (7.3)	8 (2.9)
18-20	323 (16.7)	25 (9.5)	119 (14.2)	107 (23.6)	20 (18.2)	52 (19.0)
21-25	711 (36.7)	78 (29.8)	303 (36.2)	178 (39.2)	36 (32.7)	116 (42.3)
26-35	666 (34.4)	121 (46.2)	323 (38.5)	96 (21.1)	35 (31.8)	91 (33.2)
>35	138 (7.1)	33 (12.6)	73 (8.7)	14 (3.1)	11 (10.0)	7 (2.6)
Race, (%)						
Black	967 (49.9)	89 (34.0)	366 (43.7)	296 (65.2)	89 (80.9)	127 (46.4)
White	813 (42.0)	155 (59.2)	397 (47.4)	115 (25.3)	20 (18.2)	126 (46.0)
Other	158 (8.2)	18 (6.9)	75 (8.9)	43 (9.5)	1 (0.9)	21 (7.7)
Hispanic ethnicity, (%)	108 (5.6)	14 (5.3)	48 (5.7)	33 (7.3)	3 (2.7)	10 (3.6)
Marital status, (%)						
Single/never married	1143 (59.0)	128 (49.0)	461 (55.0)	292 (64.5)	77 (70.0)	185 (67.5)
Married/living with a partner	669 (34.6)	108 (41.4)	319 (38.1)	140 (30.9)	29 (26.4)	73 (26.6)
Separated/divorced/widowed	124 (6.4)	25 (9.6)	58 (6.9)	21 (4.6)	4 (3.6)	16 (5.8)
Parity, (%)						
0	985 (50.8)	131 (50.0)	392 (46.8)	211 (46.5)	53 (48.2)	198 (72.3)
1	446 (23.0)	49 (18.7)	202 (24.1)	122 (26.9)	25 (22.7)	48 (17.5)
2	319 (16.5)	50 (19.1)	164 (19.6)	71 (15.6)	20 (18.2)	14 (5.1)
3 or more	188 (9.7)	32 (12.2)	80 (9.5)	50 (11.0)	12 (10.9)	14 (5.1)
Receiving public assistance (%)	698 (36.0)	83 (31.7)	290 (34.6)	221 (48.7)	43 (39.1)	61 (22.3)
Trouble paying basic expenses (%)	714 (36.9)	99 (37.8)	284 (33.9)	168 (37.0)	54 (49.1)	109 (39.8)
Depression (%)	328 (18.9)	40 (16.9)	156 (20.6)	69 (17.5)	28 (30.1)	35 (14.2)
History of comorbidities (%)	697 (36.0)	107 (40.8)	325 (38.8)	141 (31.1)	42 (38.2)	82 (29.9)
General health (%)						
Excellent	504 (26.0)	77 (29.4)	217 (25.9)	117 (25.8)	25 (22.7)	68 (24.8)
Very Good	813 (42.0)	107 (40.8)	378 (45.1)	163 (35.9)	37 (33.6)	128 (46.7)

Characteristics	Methods					
	Total Sample (N = 1938)	Copper IUD (N = 262)	LNG-IUD (N = 838)	Implant (N = 454)	DMPA (N = 110)	PPR (N = 274)
Good	512 (26.4)	64 (24.4)	197 (23.5)	146 (32.2)	37 (33.6)	68 (24.8)
Fair or Poor	108 (5.6)	14 (5.3)	45 (5.4)	28 (6.2)	11 (10.0)	10 (3.6)
Body mass index (%)						
<18.5	60 (3.1)	9 (3.4)	19 (2.3)	15 (3.3)	8 (7.3)	9 (3.3)
18.5-24.99	795 (41.1)	122 (46.7)	335 (40.0)	159 (35.0)	50 (45.5)	129 (47.1)
25-29.99	471 (24.3)	52 (19.9)	208 (24.9)	121 (26.7)	26 (23.6)	64 (23.4)
30+	610 (31.5)	78 (29.9)	275 (32.9)	159 (35.0)	26 (23.6)	72 (26.3)
History of STI (%)	807 (41.6)	107 (40.8)	348 (41.5)	204 (44.9)	52 (47.3)	96 (35.0)
Education level (%)						
High school or less	547 (28.2)	47 (17.9)	200 (23.9)	208 (45.8)	37 (33.6)	55 (20.1)
Some college	840 (43.3)	113 (43.1)	378 (45.1)	177 (39.0)	57 (51.8)	115 (42.0)
College or graduate degree	551 (28.4)	102 (38.9)	260 (31.0)	69 (15.2)	16 (14.5)	104 (38.0)

*IUD = intrauterine device; LNG IUD = levonorgestrel intrauterine device; DMPA = depot medroxyprogesterone acetate; PPR = oral contraceptive pills, patch, and ring; STI = sexually transmitted infection

Table 2

Unadjusted and Adjusted Analysis of Lack of Sexual Desire Reported at Six Months

Predictors	Lacked Interest in Sex		Crude OR	95% Confidence Interval		Adjusted OR [*]	95% Confidence Interval	
	No (%)	Yes (%)		Lower	Upper		Lower	Upper
Total	1475 (76.1)	463 (23.9)						
Age, years								
<18	71 (71.0)	29 (29.0)	1.53	0.96	2.44	2.04	1.18	3.55
18-20	238 (73.7)	85 (26.3)	1.34	0.98	1.81	1.55	1.08	2.22
21-25	561 (78.9)	150 (21.1)	Reference	-	-	Reference	-	-
26-35	504 (75.7)	162 (24.3)	1.20	0.93	1.55	1.18	0.87	1.59
>35	101 (73.2)	37 (26.8)	1.37	0.90	2.08	1.21	0.74	1.99
Race								
White	676 (83.1)	137 (16.9)	Reference	-	-	Reference	-	-
Black	666 (68.9)	301 (31.1)	2.23	1.77	2.80	1.78	1.33	2.40
Other	133 (84.2)	463 (23.9)	0.93	0.58	1.48	0.71	0.42	1.22
Ethnicity								
Hispanic	83 (76.9)	25 (23.1)	0.96	0.60	1.52			
Non-Hispanic	1392 (76.1)	438 (23.9)	Reference	-	-	-	-	-
Marital status								
Single/never married	901 (78.8)	242 (21.2)	Reference	-	-	Reference	-	-
Married/cohabitating	476 (71.2)	193 (28.8)	1.51	1.21	1.88	1.82	1.38	2.40
Separated/divorced/widowed	97 (78.2)	27 (21.8)	1.04	0.66	1.62	1.19	0.70	2.00
Parity								
0	800 (81.2)	185 (18.8)	Reference			Reference		
1	327 (73.3)	119 (26.7)	1.57	1.21	2.05	0.98	0.69	1.40
2	222 (69.6)	97 (30.4)	1.89	1.42	2.52	1.27	0.85	1.89
3 or more	126 (67.0)	62 (33.0)	2.13	1.51	3.00	1.20	0.73	1.98
Receiving public assistance								
No	1002 (80.8)	238 (19.2)	Reference	-	-	Reference	-	-
Yes	473 (67.8)	225 (32.2)	2.00	1.62	2.48	1.42	0.92	1.65

Predictors	Lacked Interest in Sex		Crude OR	95% Confidence Interval		Adjusted OR*	95% Confidence Interval	
	No (%)	Yes (%)		Lower	Upper		Lower	Upper
Trouble paying basic expenses								
No	955 (78.1)	268 (21.9)	Reference	-	-	-	-	-
Yes	519 (72.7)	195 (27.3)	1.34	1.08	1.66	-	-	-
Depression								
No	1091 (77.8)	312 (22.2)	Reference	-	-	Reference	-	-
Yes	236 (72.0)	92 (28.0)	1.36	1.04	1.79	1.23	0.92	1.65
History of comorbidities								
No	949 (76.5)	292 (23.5)	Reference	-	-	-	-	-
Yes	526 (75.5)	171 (24.5)	1.06	0.85	1.31			
General health								
Excellent	406 (80.6)	98 (19.4)	Reference	-	-	Reference	-	-
Very good	629 (77.4)	184 (22.6)	1.21	0.92	1.60	1.21	0.89	1.64
Good	364 (71.1)	148 (22.6)	1.68	1.26	2.26	1.29	0.92	1.81
Fair or poor	75 (69.4)	33 (30.6)	1.82	1.15	2.90	1.32	0.78	2.26
Body mass index								
<25	688 (80.5)	167 (19.5)	Reference	-	-	Reference	-	-
25-29.99	347 (73.7)	124 (26.3)	1.47	1.13	1.92	1.31	0.97	1.78
30+	439 (72.0)	171 (28.0)	1.61	1.26	2.05	1.08	0.79	1.46
History of STI								
No	889 (78.6)	242 (21.4)	Reference	-	-	Reference	-	-
Yes	586 (72.6)	221 (27.4)	1.39	1.12	1.71	1.09	0.85	1.40
Education level								
High school or less	389 (71.1)	158 (28.9)	Reference	-	-	-	-	-
Some college	634 (75.5)	206 (24.5)	0.80	0.63	1.02	-	-	-
College or graduate degree	452 (82.0)	99 (18.0)	0.54	0.41	0.72	-	-	-
Method								
Copper IUD	214 (81.7)	48 (18.3)	Reference	-	-	Reference	-	-
LNG IUD	658 (78.5)	180 (21.5)	1.22	0.86	1.74	1.33	0.89	1.99

Predictors	Lacked Interest in Sex		Crude OR	95% Confidence Interval		Adjusted OR [*]	95% Confidence Interval	
	No (%)	Yes (%)		Lower	Upper		Lower	Upper
Implant	324 (71.4)	130 (28.6)	1.79	1.23	2.60	1.60	1.03	2.49
DMPA	69 (62.7)	41 (37.3)	2.65	1.61	4.36	2.61	1.47	4.61
OCP	105 (78.9)	28 (21.1)	1.19	0.71	2.00	1.41	0.79	2.52
Patch	34 (79.1)	9 (20.9)	1.18	0.53	2.62	1.01	0.38	2.68
Ring	71 (72.4)	27 (27.6)	1.70	0.99	2.92	2.53	1.37	4.69

† Bolded characteristics are statistically significant.

‡ IUD = intrauterine device; LNG IUD = levonorgestrel intrauterine device; DMPA = depot medroxyprogesterone acetate; OCP = oral contraceptive pills; STI = sexually transmitted infection

* Adjusted analyses performed with multivariable logistic regression with the following variables in the model: age, race, marital status, parity, receiving public assistance, depression, general health, body mass index, history of STI, contraceptive method.

Table 3

Unadjusted and Adjusted Analysis of Lack of Sexual Desire at 6 months follow-up for 560 women who did not use birth control method or used withdrawal method prior to CHOICE enrollment

Predictors	Lacked Interest in Sex		Crude OR	95% Confidence Interval		Adjusted OR	95% Confidence Interval	
	No (%)	Yes (%)		Lower	Upper		Lower	Upper
Total	430 (76.8)	130 (23.2)						
<i>Lack of interest in sex at baseline</i>								
No	284 (66.1)	41 (31.5)	Ref	-	-	Ref	-	-
Yes	146 (33.9)	89 (68.5)	4.22	2.77	6.43	3.98	2.58	6.14
<i>Age, years</i>								
<18	18 (4.2)	9 (6.9)	2.09	0.87	4.99	-	-	-
18-20	76 (17.7)	24 (18.5)	1.32	0.74	2.34	-	-	-
21-25	167 (38.8)	40 (30.8)	Ref	-	-	-	-	-
26-35	143 (33.3)	47 (36.2)	1.37	0.85	2.21	-	-	-
>35	26 (6.0)	10 (7.7)	1.61	0.72	3.60	-	-	-
<i>Race</i>								
White	178 (41.4)	36 (27.7)	Ref	-	-	Ref	-	-
Black	221 (51.4)	84 (64.6)	1.88	1.21	2.91	1.56	0.94	2.60
Other	31 (7.2)	10 (7.7)	1.60	0.72	3.54	1.20	0.51	2.81
<i>Ethnicity</i>								
Hispanic	16 (3.7)	9 (6.9)	1.93	0.83	4.46	-	-	-
Non-Hispanic	414 (96.3)	121 (93.1)	Ref	-	-	-	-	-
<i>Marital status</i>								
Single/never married	258 (60.0)	68 (52.7)	Ref	-	-	-	-	-
Married/living with a partner	141 (32.8)	56 (43.4)	1.51	1.00	2.27	-	-	-
Separated/divorced/widowed	31 (7.2)	5 (3.9)	0.61	0.23	1.63	-	-	-
<i>Parity</i>								
0	219 (50.9)	52 (23.1)	Ref	-	-	Ref	-	-
1	96 (22.3)	30 (23.1)	1.32	0.79	2.19	0.90	0.48	1.70
2	79 (18.4)	30 (23.1)	1.60	0.95	2.68	1.05	0.54	2.04

Predictors	Lacked Interest in Sex		Crude OR	95% Confidence Interval		Adjusted OR	95% Confidence Interval	
	No (%)	Yes (%)		Lower	Upper		Lower	Upper
3 or more	36 (8.4)	18 (13.8)	2.11	1.11	4.00	1.16	0.52	2.59
<i>Receiving public assistance</i>								
No	275 (64.0)	65 (50.0)	Ref	-	-	Ref	-	-
Yes	155 (36.0)	65 (50.0)	1.77	1.19	2.64	1.32	0.76	2.30
<i>Trouble paying basic expenses</i>								
No	283 (65.8)	78 (60.0)	Ref	-	-	-	-	-
Yes	147 (34.2)	52 (40.0)	1.28	0.86	1.92	-	-	-
<i>Depression</i>								
No	305 (79.4)	88 (78.6)	Ref	-	-	-	-	-
Yes	79 (20.6)	24 (21.4)	1.05	0.63	1.76	-	-	-
<i>History of comorbidities</i>								
No	272 (63.3)	79 (60.8)	Ref	-	-	-	-	-
Yes	158 (36.7)	51 (39.2)	1.11	0.74	1.66	-	-	-
<i>General health</i>								
Excellent	106 (24.7)	36 (27.7)	Ref	-	-	-	-	-
Very good	181 (42.2)	45 (34.6)	0.73	0.44	1.21	-	-	-
Good	114 (26.6)	39 (30.0)	1.01	0.60	1.70	-	-	-
Fair or poor	28 (6.5)	10 (7.7)	1.05	0.47	2.38	-	-	-
<i>Body mass index (BMI)</i>								
<25	194 (45.1)	47 (36.4)	Ref	-	-	-	-	-
25-29.99	100 (23.3)	33 (25.6)	1.36	0.82	2.26	-	-	-
30+	136 (31.6)	49 (38.0)	1.49	0.94	2.35	-	-	-
<i>History of STI</i>								
No	260 (60.5)	66 (50.8)	Ref	-	-	-	-	-
Yes	170 (39.5)	64 (49.2)	1.48	1.00	2.20	-	-	-
<i>Education level</i>								
High school or less	109 (25.3)	48 (42.3)	Ref	-	-	-	-	-
Some college	202 (47.0)	55 (42.3)	0.62	0.39	0.97	-	-	-

Predictors	Lacked Interest in Sex		Crude OR	95% Confidence Interval		Adjusted OR	95% Confidence Interval	
				Lower	Upper		Lower	Upper
College or graduate degree	119 (27.7)	27 (20.8)	0.52	0.30	0.88	-	-	-
<i>Method</i>								
Copper IUD	64 (14.9)	14 (10.8)	Ref	-	-	Ref	-	-
Hormonal IUD	177 (41.2)	51 (39.2)	1.32	0.68	2.54	1.22	0.61	2.44
Implant	93 (21.6)	26 (20.0)	1.28	0.62	2.64	0.89	0.41	1.96
DMPA	26 (6.0)	15 (11.5)	2.64	1.12	6.23	1.99	0.79	5.05
Pill	41 (9.5)	14 (10.8)	1.56	0.68	3.61	1.63	0.67	4.00
Patch	6 (1.4)	3 (2.3)	2.29	0.51	10.26	2.53	0.50	12.75
Ring	23 (5.3)	7 (5.4)	1.39	0.50	3.88	1.37	0.47	4.05

* Adjusted analyses performed with multivariable logistic regression with the following variables in the model: baseline lack of interest in having sex, race, parity, receiving public assistance, contraceptive method.

† Bolded characteristics are statistically significant.

‡ IUD = intrauterine device; LNG IUD = levonorgestrel intrauterine device; DMPA = depot medroxyprogesterone acetate; OCP = oral contraceptive pills; STI = sexually transmitted infection