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Relationships between condoms, hormonal methods, and sexual pleasure and satisfaction: an exploratory analysis from the Women's Well-Being and Sexuality Study

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Abstract

Background—Little is known about how condoms and other contraceptives influence women's sexual enjoyment, which could shape use patterns.

Methods—Data from an online study of women's sexual health and functioning were used to examine how three categories of contraceptive use - hormonal method only, condoms primarily, and dual use - could help predict decreased sexual pleasure associated with contraceptive method and overall sexual satisfaction in the past 4 weeks.

Results—In analyses controlling for age, relationship length, and other variables, male condoms were most strongly associated with decreased pleasure, whether used alone or in conjunction with hormonal methods. Women who used hormonal methods alone were least likely to report decreased pleasure, but they also had significantly lower overall scores of sexual satisfaction compared with the other two groups. Dual users, or women who used both condoms and a hormonal method, reported the highest sexual satisfaction scores.

Conclusions—Because male condoms were viewed by many of these women as decreasing sexual pleasure, sexual risk practices are likely to be affected. Although hormonal only users were highly unlikely to report decreased pleasure, they reported lower sexual satisfaction compared with the other two groups. Dual users, who had the highest sexual satisfaction scores, may have been the most sexually satisfied because they felt more fully protected against unwanted pregnancy and sexually transmissible infections - consistent with previous qualitative documentation of `eroticising safety.' This exploratory study suggests that different contraceptives affect sexuality in various ways, warranting further research into these sexual dimensions and how they influence contraceptive practices.

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Conflicts of interest None declared.

Keywords

contraception; hormonal methods; male condoms; sexual pleasure; sexual satisfaction

Introduction

Although methods of pregnancy and sexually transmissible infection (STI) prevention are expressly designed for use during sex, we know surprisingly little about how contraception affects sexual enjoyment and functioning,[1,2] particularly for women.[3] The literature on women and male condoms is one example of this `pleasure deficit'.[4] Public health programs often rely on women to carry out sexual risk reduction through condom use, even though women do not `wear' male condoms. Research indicates that women may lack the power to press for condoms,[5-9] and that even when women are able to negotiate for condom use, they may be disinclined to do so out of desire for sex that is close, loving, and intimate.[10-14] At least two qualitative studies, one in the UK[15] and one in the USA,[16] have explored women's sexual experiences with male condoms. In both this latter study and in a quantitative analysis of women at risk for HIV in New York City,[17] those women who felt that condoms undermined their sexual pleasure were less likely to use them than women who did not report condom-related reductions in pleasure. Despite this burgeoning research, we still know relatively little about women's sexual experiences with male condoms, or how their risk behaviours may be shaped by their perceptions of how condoms reduce sexual sensation and enjoyment.

Nor do many studies on hormonal contraceptives systematically assess how these methods affect sexual functioning or pleasure.[18-20] Contraceptive researchers have thoroughly documented hormonal methods' effect on ovulation.[21] Far fewer have demonstrated their effect on the peak in sexual interest that many women experience during ovulation[22,23] or have explored the ways that methods enhance or hinder sexual enjoyment, thereby altering use patterns. For other widely used non-hormonal methods, including tubal ligation and the intrauterine device (IUD), sexuality research is also lacking, despite two studies exploring the ways in which side-effects such as excess vaginal wetness[24] and post-sterilisation bleeding[25] affect sexual acceptability. This inattention to the sexual aspects of women's methods is even more striking when juxtaposed with hormonal methods under development for men. Research on male-based methods is highly marked by concern for their effects on libido, sex drive, and sexual functioning,[26-28] with an implicitrecognition that uptake will be limited if men's pleasure-seeking is compromised.

Although the literature on male condoms and hormonal methods has largely neglected women's sexuality, some investigations have examined influences on sexual functioning, with results suggesting that women's contraceptive behaviours are shaped by sexual acceptability and side-effects. Women's (and men's) sexual comfort with and enjoyment of the female condom, including the potential increase of clitoral stimulation through its outer ring, reportedly contribute to uptake and continuation, whereas discomfort from the inner ring may lead to non-adoption or discontinuation.[29-33] In a longitudinal study of new oral contraceptive users in the USA, researchers found that a decrease in users' libido and sexual enjoyment was strongly associated with discontinuation.[19] In a study of the features most likely to shape contraceptive method choice, women ranked `lack of interference with sexual pleasure' as a `very important' consideration as often as men did (30% of men, 28% of women).[34] Severy and Newcomer have argued that concern for sexual intimacy and pleasure plays a central role in determining user perspectives regarding new methods.[35] Similarly, in a qualitative study on sexual pleasure and contraceptive use in the USA, the way contraceptives altered `sexual aesthetics' (sensation, libido, lubrication, spontaneity, and other sexual attributes) mattered to women and men equally and shaped both the choice of method and manner of use.[16,36]

These studies suggest that uptake and continuation of contraceptive methods are influenced by how they make sex feel. However, few of these studies explore multiple forms of contraception simultaneously, particularly the reversible methods used most frequently: hormonal methods, especially oral contraceptives, and male condoms.[37,38] Further, although a few researchers have explored some of these issues qualitatively, quantitative analyses are lacking. Finally, the existing research tells us little about how contraceptives affect the different dimensions of sexuality: for example, physical sensation versus overall sexual satisfaction.

We had the opportunity to conduct a preliminary quantitative exploration of these topics using an online study of women's sexual health. Internet-based convenience samples have been found useful for exploring understudied issues and/or for collecting data from hard-to-reach populations, such as asexual individuals[39] or gay men who seek anonymous sex partners by way of the internet.[40] Furthermore, online surveys are increasingly recognised as a potential source of high quality data, especially if appropriate steps are taken during data collection and cleaning.[41,42] Further, to our knowledge, no other secondary dataset could allow for exploration of our research question - that is, whether contraceptive method type can help predict women's sexual enjoyment or lack of enjoyment. Thus, although it captured a select group of women, the internet dataset allowed us to generate hypotheses about more than one contraceptive method and dimension of women's sexuality.

Methods

Procedures and participants

Data were collected as part of an online health and sexuality study conducted by researchers at The Kinsey Institute for Research in Sex, Gender, and Reproduction at Indiana University (including the third and fourth authors of this paper). The global aim of this investigation, the `Women's Well-Being and Sexuality Study,' was to collect data on the relationship between women's current sexual preferences and practices and their health and well-being. The investigators specifically wanted to study this topic among women varying in sexual orientation, including self-identified homosexual, bisexual, heterosexual, and transgender women. Given these aims and intended participants, internet data collection was chosen.

Online respondents were recruited through advertisements placed in The Kinsey Institute newsletter, email listserves, and by word-of-mouth, reflecting the diffusion of information via the internet. The protocol was approved by the Indiana University Institutional Review Board, and the anonymity of the online study meant that the data were free of all identifying information - a fact made explicit to respondents on introductory web pages as a way of improving data validity. The questionnaire took ~30 min to complete. Respondents were not offered any monetary or other incentive to complete the questionnaire, which discouraged duplicates. The online format and lack of compensation was hypothesised to attract a sample of relatively young, socially privileged women, possibly more comfortable with sexuality and more likely to be using contraceptives than the general population. However, we decided to proceed with the analysis given the dearth of data on this topic. We also suspected that respondents would be particularly likely to be using the most common reversible methods of interest: hormonal methods and condoms.[37]

Additional efforts were made to ensure the validity of the data. We looked for `rapid submissions' during data collection and cleaning; since the date and time of each submission were available, we could identify submissions with similar or identical responses and/or those entered within a short period of time. However, we found none of the rapid submissions encountered by other internet researchers, which we believe was due to the lack of monetary incentive.[43] Other cases (n = 15) involved partial data completion - that is, a respondent had completed only part of the survey and clicked the submit button to save her responses, only to

return later and fill out the survey in full. We took care when cleaning the data to either match or delete those submissions with identical responses. Finally, we excluded participants who indicated they had not responded seriously, as captured by a prompt at the end of the interview (n = 12).*

The survey contained questions regarding respondents' sexual orientation and the gender of their sexual partners. Based on their primary partner choice, individuals were directed to a male partner version or female partner version of the questionnaire. Six hundred and twelve women reported a history of sexual intercourse with men, completed all parts of the study, and indicated that they took the survey seriously. Given our interest in contraceptive use, we restricted the current analyses to those respondents who: (1) had engaged in sexual activity with a man in the past 4 weeks; (2) were not infertile, either naturally or due to a surgical procedure; and (3) had used a reversible method of contraception in the past 4 weeks (n = 258). After additional exclusion of certain contraceptive methods due to prohibitively small numbers (see below), our final sample comprised 189 women.

Measures

Contraceptive method—Women were asked to indicate whether or not they had used any of 15 different reversible contraceptive methods during the past 4 weeks. Because of the relatively low prevalence of use for many of the methods, which precluded separate analyses for each one, we created a contraceptive method variable with three mutually exclusive categories capturing the most common contraceptive profiles: (1) users of a hormonal method (including combined birth control pills, progestin-only pills, the Patch, the NuvaRing, and Depo Provera) and no other method, referred to subsequently as `hormonal only users'; (2) users of male condoms only or male condoms in combination with withdrawal, spermicide, and/or outercourse, referred to as `condom primarily users';† and (3) users of *both* a hormonal method and male condoms, either with or without additional use of spermicide, withdrawal, and/or outercourse, referred to as `dual users'. Due to small numbers, women using any and all other reversible methods, including the diaphragm, natural family planning, the IUD, and/or emergency contraception, or women who used withdrawal only, outercourse only, or spermicides only, were excluded from the analyses (n = 60).

The literature usually operationalises `condom use' as the sole use of condoms, and `dual use' as hormonal methods in conjunction with male condoms alone. This dataset allowed us to more fully characterise what condom and dual use entails for many users. In the current sample, most women who reported use of male condoms also reported use of withdrawal, spermicide, and/or outercourse; very few women used male condoms and no other method in the past month (n = 27). We believe this broader definition of condom use (that is, use of condoms primarily) represents a more accurate depiction of how most couples use condoms - that is, neither alone nor every time, but in conjunction with other risk-reduction practices. This broader definition is reflected in both our `condoms primarily' and our `dual use' categories. A substantial number of women, however, used a hormonal method without the use of any additional method, which is why we created the `hormonal method only' category.

Sexuality outcomes

Decreased sexual pleasure due to contraceptive method served as one of two outcome variables. After respondents indicated which contraceptive method(s) they had used in the past 4 weeks,

*The last question of the survey asked, `Sometimes people fill out questionnaires but do not take them seriously and just fill in answers that may not be accurate. We do not want to use these in the study.' Only those respondents who answered `I took the survey seriously - use my information in the study' were included in the analyses.

†Respondents were asked if they had used the female condom in the past 4 weeks. However, none of the women who met our inclusion criteria had done so, so our analysis pertains to male condoms only.

they were asked, `Did your use of contraceptive or STD protection increase or decrease your sexual enjoyment in the last 4 weeks?' Possible responses included `increased,' `decreased,' and `neither.' Our analyses focussed on those who responded `decreased'; we combined those respondents who said `increased' (n = 22) or `neither' (n = 125) into one category. We dichotomised the variable in this way because we wanted to look specifically at detractions from pleasure, given how they could undermine use and increase sexual risk behaviour.

Sexual satisfaction score represents a standardised mean of the following three questions: `How satisfied are you with your sex life?' (seven possible responses, ranging from `very satisfied' to `very dissatisfied'); `How would you rate your sexual relationship?' (five possible responses, ranging from `excellent' to `poor'); and `If in a sexual relationship, how satisfied are you with your sexual relationship?' (seven possible responses, ranging from `very satisfied' to `very dissatisfied'). The Cronbach's Alpha for these three questions was 0.935. Values for the resulting standardised sexual satisfaction score ranged from a lowest possible score of -2.37 (indicating the poorest sexual satisfaction) to 0.999 (indicating the highest possible sexual satisfaction), with a mean score of 0. This inelegant score is the result of standardising three important measures of satisfaction with different response scales. Although the measure does not allow for handy comparisons between categories such as `satisfied' and `dissatisfied,' it does facilitate comparisons between contraceptive users on sexual satisfaction in terms of direction and magnitude.

Covariates

The Women's Well-Being and Sexuality Study collected demographic information that allowed us to control for certain variables known to be associated with contraceptive method. These included relationship length, age, marital status, number of children in the household, level of education, household income, STI history, number of current sexual partners, and employment status. Those women who did not report being in a relationship, even though all had had vaginal intercourse in the past 4 weeks, are included in the relationship length category of `zero to less than 6 months.'

Statistical analyses

We compared women in each of the three primary contraceptive categories with respect to demographic characteristics using χ^2 tests and ANOVA. We also examined the univariate associations between the covariates and each of the two outcome variables, using χ^2 statistics, F-tests, and correlation coefficients as appropriate. We used multiple logistic regression to explore whether contraceptive method predicted decreased pleasure, and multiple linear regression to examine its relationship to sexual satisfaction score, while controlling for age, length of relationship, and other covariates either that were associated with the outcomes in the univariate analysis or that altered the estimate of the effect on contraceptive method on the outcome. Those covariates that were independently associated with the outcome variables but that failed to change the betas by 10% or more in the multivariate models were dropped from the final models.[>‡] However, we included age and relationship length in each of the multivariate models, regardless of their univariate associations with the outcomes, because these two variables are so strongly associated with contraceptive use and sexuality.

[‡]In multivariate models, number of children in the household, even though not associated with sexual satisfaction score in univariate analyses, was added to the final model because it altered the association between contraceptive method and sexual satisfaction score.

Results

Demographic characteristics and contraceptive use

Table 1 provides a demographic overview of the sample. Women were largely young (mean age = 24.5), never married (57%), childless (79%), and, in keeping with internet users, well educated (82% had spent at least some time at college). Most women were employed full-time or part-time (60%) and one-third (35%) were full-time students, suggesting strong motivation to use contraception and avoid unintended pregnancy. Most women were in long-term relationships with a single partner. Despite the sample's relative youth and nulliparity, half of the respondents (54%) had been in their primary relationship for over 2 years and only one-fifth (22%) had been in their relationship for less than 6 months. More than one in three women (36%) had been diagnosed with at least one STI in their lifetime.

Contraceptive use patterns—As expected, women's contraceptive method varied by demographic characteristic (Table 2). A higher percentage of dual users (37%) were in relationships of less than 6 months than condom primarily users (19%) or hormonal only users (14%) ($P = 0.011$); they were also more likely to be unmarried (80%) than condom primarily users (53%) or hormonal only users (45%) ($P = 0.005$). Dual users were also on average younger (mean age = 22.0 years) than condom primarily users (mean age = 25.6) or hormonal only users (mean age = 25.3) ($P = 0.011$).

Predictors of decreased sexual pleasure due to contraceptive method

Univariate analyses—The percentage of women reporting that their contraceptive method (s) had decreased their pleasure in the past 4 weeks differed strongly by contraceptive method (Table 3). While only 4% of hormonal only users reported decreased pleasure due to their method, 25% of condom primarily users and 23% of dual users did so ($P = 0.002$). Relative to hormonal only users, women who used condoms primarily had six times the odds of reporting decreased pleasure (odds ratio (OR) = 6.2; $P = 0.006$), as did dual method users (OR = 5.6; $P = 0.012$). STI history was the only covariate significantly associated with decreased pleasure. Women with no STI history were more than twice as likely to report that their method detracted from sexual pleasure (21% *v*. 8%, $P = 0.026$).

Multivariate logistic regression analyses—When controlling for relationship length, age, and STI history, condom use remained a significant predictor of decreased enjoyment due to method. Compared with hormonal only users, the odds for condom primarily users to report that their method decreased their sexual enjoyment were seven times greater (adjusted OR = 6.7; $P = 0.009$). Dual method users had an odds six times greater than hormonal users to report decreased pleasure (adjusted OR = 6.1; $P = 0.012$).

Predictors of overall sexual satisfaction

Univariate analyses—In the ANOVA analyses, several covariates were associated with the overall sexual satisfaction score (Table 4). Marital status was strongly and significantly associated, with single women (either never married or separated/divorced) reporting the highest satisfaction and married women reporting the lowest ($P = 000$). Relationship length was also negatively associated with sexual satisfaction ($P = 0.051$). Younger women were also more likely to report higher scores ($P = 0.004$), as were women with no known STI history ($P = 0.022$).

Sexual satisfaction score also differed significantly by contraceptive method. Notably, however, the effects differed from the patterns in the previous analysis. Dual users had the highest sexual satisfaction scores, and hormonal only users had the lowest ($P = 0.001$). Relative

to hormonal only users, dual users had scores that were 0.59 points higher - a considerable difference given the scale from -2.37 to 0.999 ($P = 0.002$).

Multiple linear regression analyses—Contraceptive method remained a significant, albeit diminished, predictor of overall sexual satisfaction, even when controlling for age, relationship length, marital status, and STI history. Compared with hormonal only users, dual users had scores that were 0.41 points higher ($P = 0.039$). Condom primarily users also had higher scores than hormonal only users, but the difference was not statistically significant ($P = 0.295$).

Discussion

The findings from this exploratory study suggest that contraceptive method can shape women's sexual pleasure and satisfaction, even when controlling for potential confounders such as age, relationship length, and marital status. However, this influence is moderated not only by method, but by dimension of sexuality. When asked directly about the effect of their contraceptive method(s) on their sexual enjoyment in the past 4 weeks, women who used male condoms primarily were significantly more likely to report decreased pleasure. Dual users' reports of decreased pleasure were almost identical, suggesting that condoms `trumped' hormonal method in terms of their effects on immediate erotic sensation. However, when asked about their sexual satisfaction more broadly, condom primarily users did not have the lowest scores. Women classed as `dual users' (mainly women using condoms and the pill) had the highest sexual satisfaction scores. And although women using hormonal contraception only were very unlikely to associate their method with decreased sexual pleasure, they had the lowest sexual satisfaction scores.

We suggest that this paradoxical disparity partly reflects how directly or indirectly women think of their contraceptive method when asked about particular dimensions of sexuality. Given male condoms' undeniable presence during sex, they may come to mind more than hormonal methods when women are asked about the effect of their method on sexual pleasure. However, when asked about overall sexual satisfaction separately from their family planning practices, women may be less likely to make direct associations with contraception. We argue that the more direct association - the link between a contraceptive method and decreased pleasure - is more likely to change contraceptive practices and, potentially, sexual risk. Even if male condoms are not associated with relative sexual dissatisfaction, the sexual attributes women give to condoms are likely to alter attitudes and practices. If women think male condoms undermine pleasure, they may be less inclined to use them at each sexual encounter or during the full duration of intercourse.

The current analysis augments findings from a recent qualitative study, in which women reported that condoms `cover up' sensation and exacerbate vaginal dryness, which led them to use condoms intermittently or not at all.[16] The public health field has been slow to consider the possibility that condoms' effects on women's pleasure may alter preferences or practices (although exceptions certainly exist[15,17,44,45]). In contrast, frequent references are made to the fact that many men do not like using condoms because they curtail sexual sensation.[46-48] If public health practitioners continue to rely on women to promote and use condoms, we must acknowledge and respond to women's sexual resistance to them.

The dual users' higher sexual satisfaction scores in our analysis supports another finding from recent qualitative work: the eroticisation of safety[16] Several respondents in that qualitative study could not `let go' sexually unless properly protected from unwanted pregnancy and disease, sometimes with two or even three methods. For risk-averse women and men for whom avoiding pregnancy and/or disease were imperative, effective prophylaxis was a precondition

of enjoying sex to its fullest. Socially advantaged respondents were particularly likely to eroticise contraceptive use, as contraception was seen as necessary in order to take advantage of the educational and professional opportunities afforded to them. The sample for the current analysis was composed mainly of well educated, high income women, indicating middle and upper class attributes and strong motivations to avoid unintended pregnancy. These women seem to provide an interesting case study in `positive deviance' - that is, they use contraception in desirable ways, including protection against both pregnancy and STIs/HIV, and they report (relative) sexual satisfaction. As such, these women second a public health strategy suggested by Philpott and colleagues:[2] using enhanced pleasure as a way to promote safer sex through dual use and dual protection.

Finally, the current study expands the literature on hormonal contraceptives and sexuality, which indicates that although these methods can enhance sexual spontaneity and enjoyment for many women, they may reduce sexual interest for others.[19,49,50] The current analyses focussed on sexual satisfaction whereas previous studies have assessed the effects of oral contraceptives on spontaneous sexual interest and sexual enjoyment. Admittedly, the cross-sectional data presented here do not allow us to demonstrate why or how hormonal only users had the poorest overall sexual satisfaction scores. It is notable, however, that hormonal only users were significantly more likely to report that they were `dissatisfied' or `very dissatisfied' with their level of sexual interest than condom primarily users or dual users (not shown).

This study has numerous limitations, the most notable of which is our use of an internet-based convenience sample. Despite increasing evidence that online questionnaires can produce higher quality and less biased data than once believed,[41,42] our sample surely captures a select group of women - a socially privileged group using effective contraception more consistently than the population at large.[38] These women were also willing to spend 30 min answering questions about sexuality without financial reward. However, given these respondents' strong motivation to use contraception, their reports of detracted pleasure are perhaps even more striking. Women less motivated to use prophylactics may be even further disinclined to use them if they detract from sexual pleasure or satisfaction. Nonetheless, future studies of this topic should involve much more diverse samples.

The sample size also precluded analysis of several contraceptive methods, such as the IUD. We were also forced to combine women who used different methods (such as pills and NuvaRings) into larger categories. Perhaps a more notable limitation was our inability to link the sexual attributes women gave to contraceptives with their actual contraceptive practices, let alone their risk of unwanted pregnancy and disease. That is, these cross-sectional data did not enable us to demonstrate that women were less likely to use methods that detracted from their sexual pleasure. In fact, in an effort to reduce recall error, we captured women's reports of detraction only from the method(s) they had used in the past 4 weeks; it may be that many women had already discontinued the methods that most detracted from their sexual pleasure.

However, our intention here was not to make definitive claims about the relationship between contraception, sexual enjoyment, and sexual risk. Rather, we wanted to generate hypotheses about some of the sexual dimensions of a few widely-used contraceptives, a heretofore understudied topic. We also hoped to add to the literature on women's sexual experience with male condoms, which has been sparse. For these purposes, this internet sample served us well despite its limitations.

We hope that this modest analysis helps to refine our understandings of contraceptive use and women's sexuality. We have suggested that sexual enjoyment consists of multiple facets, only two of which are captured here. `Decreased pleasure' refers to a more immediate, temporal phenomenon that occurs in the sensation of the sexual moment; `overall sexual satisfaction' is

a broader construct that transcends the sexual moment to include relationship dynamics, partner attention and skill, sexual self-esteem, and other phenomena. However, both are central to women's overall sexual well-being, and both seem to be affected by contraception. We urge family planning, STI, and HIV researchers to include sexuality questions on their surveys or interview guides, ideally in relation to one contraceptive method at a time. We also encourage longitudinal studies of these topics, which will enable us to draw clearer links between sexual attributes, use patterns, and experience of unintended pregnancy and STI/HIV transmission.

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Table 1

Demographic characteristics of the sample (n = 189)

	%	n
Contraceptive method in past 4 weeks		
Hormonal only users	40.7	77
Condom primarily users[A]	32.3	61
Dual method users[B]	27.0	51
Relationship length		
<6 months	21.9	39
6-12 months	11.8	21
1-2 years	12.4	22
2 or more years	53.9	96
Missing n = 11		
Age (mean, s.d.)	24.5	6.0
Marital status		
Single (never married)	56.8	105
Married	18.9	35
Living with partner	20.0	37
Separated/divorced	4.3	8
Missing n = 4		
Number of children in household		
0	78.6	125
1 or more	21.4	34
Missing n = 30		
Education		
High school or less	18.3	34
Some college	37.1	69
College or post grad	44.6	83
Missing n = 3		
Household income		
20 000 or less	21.1	39
20 001 to 40 000	23.4	43
40 001 to 75 000	29.9	55
75 001 or greater	25.5	47
Missing n = 5		
STI history		
No reported STI	63.5	120
At least lifetime STI	36.5	69
Missing = 0		
Number of current partners		
One partner	88.2	165
More than one partner	11.8	22
Missing = 2		

	%	n
Employment status		
Employed full-time	37.6	71
Employed part-time	22.2	42
Full-time student	34.9	66
Other (homemaker, unemployed)	5.3	10
Missing = 0		
Total	100.0	189

STI, sexually transmissible infection

[A] Use of male condoms either with or without withdrawal, spermicide, and/or outercourse.

[B] Use of a hormonal method and male condoms, either with or without withdrawal, spermicide, and/or outercourse.

Table 2

Demographic characteristics by contraceptive method (n = 189)

	Hormonal only users (n = 77) %	Condom primarily users[A] (n = 61) %	Dual users[B] (n = 51) %	χ^2 or F (as appropriate)
Contraceptive effect on sexual pleasure				**0.002****
Decreased enjoyment due to method	95.7	74.6	77.1	
Neutral/increased enjoyment due to method	4.3	22.9	22.9	
Sexual satisfaction score (mean, s.d.)	-0.234	-0.006	0.420	**0.002****
Relationship length				**0.011***
<6 months	13.9	19.3	36.7	
6-12 months	11.1	15.8	8.2	
1-2 years	18.1	3.5	14.3	
2 or more years	56.9	61.4	40.8	
Age (mean, s.d.)	25.3	25.6	22.0	**0.011***
Marital status				**0.005****
Single (never married)	44.7	53.3	79.6	
Married	25.0	23.3	4.1	
Living with partner	26.3	20.0	10.2	
Separated/divorced	3.9	3.3	6.1	
Number of children in household				**0.105**
Zero	75.4	73.5	90.2	
One or more	24.6	26.5	9.8	
Education				**0.101**
High school or less	19.5	13.6	22.0	
Some college	28.6	39.0	48.0	
College or post grad	51.9	47.5	30.0	
Household income				**0.996**
20 000 or less	23.0	20.0	20.0	
20 001 to 40 000	23.0	21.7	26.0	
40 001 to 75 000	28.4	31.7	30.0	
75 001 or greater	25.7	26.7	24.0	
STI history				**0.139**
No reported STI	44.2	27.9	35.3	
At least one lifetime STI	55.8	72.1	64.7	
Number of current partners				**0.468***
One partner	90.0	88.5	83.7	
More than one partner	9.1	11.5	16.3	
Employment status				**0.046***
Employed full-time	45.5	41.0	21.6	
Employed part-time	15.6	19.7	25.3	
Full-time students	32.5	32.8	41.2	
Other (homemakers, unemployed)	6.5	6.6	2.0	

	Hormonal only users (n = 77) %	Condom primarily users[A] (n = 61) %	Dual users[B] (n = 51) %	χ^2 or F (as appropriate)
Total	100.0	100.0	100.0	

STI, sexually transmissible infection

[A] Use of male condoms either with or without withdrawal, spermicide, and/or outercourse.

[B] Use of a hormonal method and male condoms, either with or without withdrawal, spermicide, and/or outercourse.

* $P < 0.05$

** $P < 0.01$

Table 3

Logistic regression with decreased sexual pleasure as outcome

Predictor	Decreased enjoyment due to method (% (*n*))	Neutral/ increased enjoyment due to method (% (*n*))	χ^2 or T stat.	sig. (χ^2 or T)	Model 1 (Unadjusted) Exp(β) Odds ratio (95% CI)	P	Model 2 (Adjusted) Exp(β) Odds ratio (95% CI)	P
Contraceptive use in past 4 weeks			12.3	**0.002****				
Hormonal only users	4.3% (3)	95.7% (66)			Ref		Ref	
Condom primarily users[A]	25.4% (15)	74.6% (44)			6.29 (1.69, 23.45)	**0.006****	6.73 (1.71, 26.67)	**0.007****
Dual method users[B]	22.9% (11)	77.1% (37)			5.65 (1.46, 21.88)	**0.012***	6.09 (1.48, 24.98)	**0.012***
Relationship length			0.8	0.858				
<6 months	16.6% (6)	83.3% (30)					Ref	
6-12 months	19.0% (4)	81.1% (17)					1.54 (0.34, 6.8)	0.579
1-2 years	20.0% (4)	80.0% (16)					2.21 (0.48, 10.26)	0.311
2 years or more	13.6% (12)	86.4% (76)					0.851 (0.26, 2.74)	0.787
Age (mean, s.e.)	23.9 (5.2)	24.4 (5.9)	0.2	0.626			1.02 (0.936, 1.11)	0.684
STI history			**4.4**	**0.026***				
At least one lifetime STI	8.3% (5)	91.7% (55)					Ref	
No reported STI	20.7% (24)	79.3% (92)					0.42 (0.14, 1.26)	0.123
Nagelkerke R^2					0.113	**0.004****	0.156	0.104

CI, confidence interval; STI, sexually transmissible infection

[A] Use of male condoms either with or without withdrawal, spermicide, and/or outercourse.

[B] Use of a hormonal method and male condoms, either with or without withdrawal, spermicide, and/or outercourse.

* $P < 0.05$

** $P < 0.01$

Table 4

Linear regression with sexual satisfaction score as outcome

Predictor	Mean sexual satisfaction score (s.d.)	F, T, or Corr Coeff[C]	sig.	Model 1 (Unadjusted)			Model 2 (Adjusted)		
				Unstandardised coefficient (95% CI)	t	P	Unstandardised coefficient (95% CI)	t	P
Contraceptive use in past 4 weeks		7.8	**0.001****						
Hormonal only users	-0.234 (1.1)			Ref			Ref		
Condom primarily users[A]	-0.006 (0.91)			0.223 (-0.136, 0.582)	1.23	0.222	0.187 (-0.165, 0.538)	1.05	0.295
Dual method users[B]	0.420 (0.64)			0.585 (0.221, 0.959)	3.09	**0.002****	0.414 (0.039, 0.789)	2.18	**0.039***
Relationship length		2.6	0.051						
<6 months	0.361 (0.76)						Ref		
6-12 months	0.115 (1.00)						-0.033 (-0.566, 0.501)	-0.12	0.904
1-2 years	0.121 (0.96)						-0.093 (-0.629, 0.443)	-0.34	0.733
2 years or more	-0.120 (0.93)						-0.271 (-0.712, 0.170)	-1.21	0.227
Age		-0.208	0.004				-0.003 (-0.033, 0.028)	-0.17	0.869
Marital status		7.3	**0.000****						
Single (never married)	0.172 (0.87)						Ref		
Married	-0.609 (1.07)						-0.618 (-1.11, -0.130)	-2.50	**0.014***
Living with partner	0.050 (1.07)						0.229 (-0.213, 0.671)	1.02	0.308
Separated/divorced	0.486 (0.48)						0.386 (-0.314, 1.09)	1.09	0.278
Number of children in household		0.67	0.414						
Zero	0.003 (0.97)						Ref		
One or more	-0.153 (1.01)						0.208 (-0.204, 0.619)	1.00	0.320
STI history		5.33	**0.022***						
At least one lifetime STI	-0.194 (1.04)						Ref		
No reported STI	0.135 (0.88)						0.496 (0.182, 0.810)	3.12	**0.002****
R^2				0.061			0.212		
Adjusted R^2				0.048			0.217		
F				4.77		**0.010***	3.485		**0.000****

CI, confidence interval; STI, sexually transmissible infection

[A] Use of male condoms either with or without withdrawal, spermicide, and/or outercourse.

[B] Use of a hormonal method and male condoms, either with or without withdrawal, spermicide, and/or outercourse.

[C] We used a Spearman correlation coefficient due to the skewed age distribution of the sample.

* $P < 0.05$

** $P < 0.01$