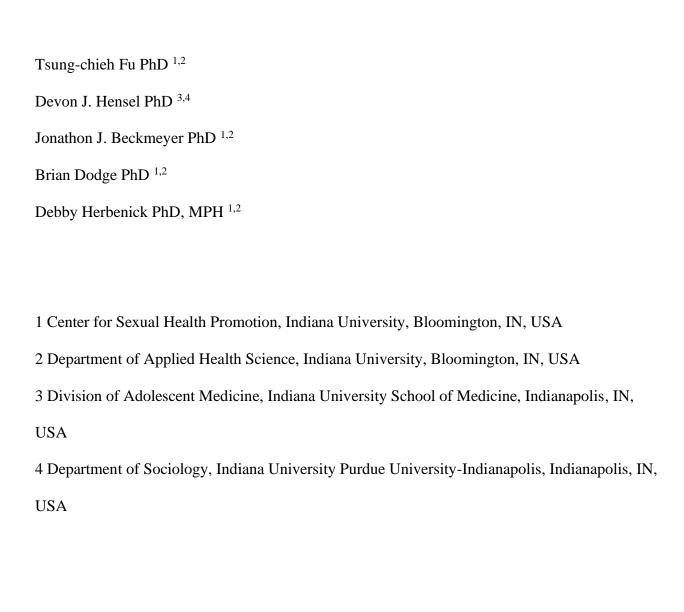
Considerations in the Measurement and Reporting of Withdrawal: Findings from the 2018 National Survey of Sexual Health and Behavior



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Abstract

Background. Although withdrawal use is routinely measured as part of contraceptive surveillance in the United States, its assessment may be prone to underreporting and measurement errors. Additionally, at the population level, little is known about subjective experiences of withdrawal.

Aim. To measure respondents' frequency of and reasons for engaging in extra-vaginal ejaculation in the past year, and to compare contraceptive withdrawal versus extra-vaginal/anal ejaculation during the most recent sexual event.

Methods. The 2018 National Survey of Sexual Health and Behavior is a U.S. nationally representative probability survey of adolescent and adults. This study was administered in February to March 2018 via GfK Research's KnowledgePanel. Respondents who reported consensual penile-vaginal intercourse in the past year were included in the analysis. Logistic regression was used to assess factors associated with finding extra-vaginal ejaculation sexy/arousing.

Outcomes. Main outcomes were the frequency of and reasons for extra-vaginal ejaculation in the past year, as well as reported contraceptive withdrawal use and the location of ejaculation at the most recent penile-vaginal intercourse.

Results. In the past year, approximately 60% of respondents reported engaging in any extravaginal ejaculation; pregnancy prevention and sexual pleasure were given as common reasons. Those who were men, White, or aged 25-29 were more likely to find extra-vaginal ejaculation sexy or arousing; no gender differences were observed in their partner's perception of this act. Prevalence of selecting withdrawal on the contraceptive inventory was 12.2% (95% CI: 10.6-14.0) at last sexual event while extra-vaginal/anal ejaculation was reported by 20.8% (95% CI:

18.7-23.0). This lack of concordance in differing measures was observed consistently across all age groups, and approximately 12-14% of individuals reported an ejaculation location that did not correspond to their withdrawal use.

Clinical Translation. The results for this study have implications for how healthcare providers discuss withdrawal with their patients and counsel them on using extra-vaginal ejaculation as part of their contraceptive use or part of their sexual repertoire.

Strengths & Limitations. This is the first nationally representative study to directly compare contraceptive withdrawal to extra-vaginal ejaculation. Limited data was collected at event-level regarding motivations for extra-vaginal ejaculation, pregnancy attitudes, perceptions of condoms and STI prevention, or exposure to erotic media, thus limiting further assessment of relationships between various factors and extra-vaginal/anal ejaculation.

Conclusion. We found that reporting of withdrawal as a contraceptive method versus extravaginal/anal ejaculation was inconsistent and that extra-vaginal/anal ejaculation was commonly used for reasons other than pregnancy prevention; future research should utilize more precise measures of "withdrawal".

Keywords: coitus interruptus, ejaculation, orgasm, contraception, sexual health, United States

Introduction

Withdrawal of the penis prior to ejaculation, or *coitus interruptus*, is a commonly practiced contraceptive method that has routinely been monitored in national health surveys in the United States, including the National Survey of Family Growth (NSFG) [1-10] and the Youth Risk Behavior Survey (YRBS) [11-13]. In those surveys, withdrawal is typically assessed as part of a contraceptive inventory list without ever even using the word "ejaculation". That approach, however, presents measurement challenges. For example, many individuals do not consider withdrawal a formal contraceptive "method" and may not disclose withdrawal use unless specifically asked [14-16]. A qualitative study of 95 young urban adults also found that few participants reported discussing withdrawal with a school teacher or healthcare provider as part of conversations on contraception [17]. Using another method to address this issue, a U.S. study of 4634 women aged 18-39 years included a contraceptive list to assess contraception use, but they purposely list withdrawal or pulling out first on the list so that respondents would know it is eligible for reporting [18].

Withdrawal can be used in combination with other, more effective, contraceptive methods or while individuals are attempting to acquire other contraception, thereby leading in underreporting of withdrawal use [7, 15, 18]. Stigma surrounding the ineffectiveness of withdrawal may also lead to embarrassment and unwillingness in disclosing the use of this method [14]. Finally, extra-vaginal/anal ejaculation may occur for reasons other than pregnancy prevention or reducing the risk of STD infection such as relationship factors or sexual pleasure motivations [7, 14, 15, 17, 19]. Studies have found that individuals were more likely to use withdrawal in ongoing versus casual relationships [19] and that trust between partners is key to communicating about withdrawal use [14]. Women may be more likely to use withdrawal to

please their partners even though they themselves may not consider withdrawal an effective means of contraception [14, 20]. Perceptions of decreased sexual pleasure associated with condoms or the desire to for increased intimacy with condom less intercourse also contributes to the decision to engage in contraceptive withdrawal [7, 14, 15, 17, 20, 21].

Given the challenges in measuring withdrawal use and the fact that withdrawal can occur for reasons other than pregnancy prevention, therefore, a better understanding of how respondents interpret contraceptive withdrawal versus extra-vaginal ejaculation would be warranted. Using data from a U.S. probability sample of individuals aged 14-49 years, this study aims to: (1) examine respondents' frequency of and reasons for engaging in extra-vaginal ejaculation in the past year, (2) identify factors associated with finding extra-vaginal ejaculation sexy/arousing, and (3) compare reported contraceptive withdrawal use with reported locations of ejaculation during recent sexual events.

Material and methods

Study Sample

Data are from the 2018 National Survey of Sexual Health and Behavior (NSSHB), a U.S. nationally representative probability survey of adolescents and adults, administered via GfK Research KnowledgePanel (Menlo, Park, CA) from February to March 2018. Survey methods and results will be reported according to the Checklist for Reporting the Results of Internet E-Surveys (CHERRIES) [22]. GfK recruits panel members through address-based sampling utilizing the U.S. Postal Service's Delivery Sequence File, achieving approximately 98% coverage of U.S. households. Adults from sampled households are invited to join the research panel through a series of mailings as well as telephone calls to non-responding households.

Households without Internet connection were provided with a web-enabled device and free Internet service. Upon consenting to joining the panel, demographic information was collected for each individual. An equal probability selection method was used to select the NSSHB study sample, which was comprised of adults ages 18-49 as well as 14-17 year-old adolescents whose parents consented to their teenager being asked to participate. GfK operates a modest incentive program that includes raffles and sweepstakes with both cash rewards and other prizes. Post-stratification weights were applied to align the study sample with benchmarks from the March 2017 Current Population Survey. The Institutional Review Board at the first author's organization reviewed and approved all study procedures.

GfK sent email invitations to 8,950 individuals, letting them know that a new online survey was available to read about and potentially complete. Participation in the 2018 NSSHB was by invitation only and completely voluntary. Of these individuals, 5,448 accessed the study information sheet and 4,554 completed the 2018 NSSHB (response rate = 50.9%). Seven adolescent responses were considered to be mischievous and were thus excluded, resulting in a total sample of 4,547 individuals. All results hereinafter present the weighted data; the weighted sample included 4,027 adults and 520 adolescents, resulting in a total sample of 4,547 individuals aged 14-49 years.

Measures

Demographics information, such as age, gender, race/ethnicity, adult/parent education, and annual household income were collected as part of GfK's panel recruitment process.

Additional information on sexual orientation (heterosexual or straight, gay or lesbian, bisexual, asexual, or something else) and current relationship status (single and not dating, single and

dating/hanging out with someone, in a relationship but not living together, living together but not married, married and living together, married but not living together) were collected in the survey.

Respondents were asked to report whether they engaged in penile-vaginal intercourse within the past year, and of those who had, they were then asked separately by gender how often ejaculation occurred "somewhere other than your partner's vagina, such as on their back or belly, their face, or into a sheet/towel" for men or how often your partner "ejaculated somewhere other than your vagina, such as on your back or belly, on your face, or into a sheet/towel" for women. Response options included: never, a few times, often, or most of the time. Individuals who reported extra-vaginal ejaculation were then asked to select reasons why they (men) or their male partner (women) ejaculate in places other than the vagina. Response options included (select all that apply): my partner finds it sexy/arousing, I find it sexy/arousing, to prevent pregnancy, I don't/my partner doesn't like how ejaculate feels inside my/her vagina, I don't/my partner doesn't like the mess on my/her clothes or underwear later, or other with a textbox to describe.

Another section of the survey addressed respondents' most recent sexual event. There, respondents who reported penile-vaginal intercourse were presented with a randomized list of birth control methods and were asked to select which one(s), if any, they or their partner had used. Among the ten birth control options was "withdrawal (pulling out; removing penis before ejaculation)." Subsequently, respondents were asked if they or their partner had an orgasm. Men who reported orgasm and women who reported male partner orgasm were then asked where ejaculation occurred: in the vagina (with or without condom), own or partner's hands, mouth, back/belly/buttocks/legs, face, anus (with or without condom), underwear/pants, sheets/towel/carpet/bed, or other.

Statistical Analysis

Inclusion criteria for the present analyses were respondents who reported penile-vaginal intercourse within the past year. Frequency of and reasons for extra-vaginal ejaculation were presented separately by gender, and chi-squared tests were used to test for differences between genders. Logistic regression accounting for survey weighting was used to assess factors associated with finding extra-vaginal ejaculation sexy or arousing. Event-level analyses were conducted restricting to individuals who reported penile-vaginal intercourse at their most recent sexual event which was within the past year. In addition, event-level analyses were also restricted to men-women dyads (men who reported a female partner or women who reported a male partner). Reported ejaculation locations were dichotomized into ejaculation in the vagina or anus (either with or without a condom) versus all other locations (or extra-vaginal/anal ejaculation) for calculations of prevalence. Prevalence and 95% confidence intervals were presented for withdrawal use as part of a birth control methods list versus extra-vaginal/anal ejaculation stratified by gender and age. Non-overlapping 95% confidence intervals were considered statistically significant ($\alpha = 0.05$). To identify discrepancies between the reporting of withdrawal versus ejaculation, specific ejaculation locations were further stratified by gender and reported use of withdrawal. All analyses were conducted using Stata version 14 (StataCorp).

Results

Analyses were restricted to a weighted sample of 2,826 individuals (unweighted N=2,687) who reported penile-vaginal intercourse within the past year. Respondents' mean age was 34.4 years (SD=8.3), and gender distribution was nearly equal (48% men, 52% women).

Additional demographic distributions by gender were presented in Table 1. Over half were White, 13% were Black, and 20% were Hispanic. Over 60% reported educational attainment of some college or higher. Nearly 60% were married, and 24% were in a relationship.

Regarding frequency of extra-vaginal ejaculation within the past year, 20% reported that the male partner ejaculated outside the vagina most of the time, and approximately one-third reported extra-vaginal ejaculation a few times or never; no significant differences were observed across genders (Table 2). Common reasons for extra-vaginal ejaculation were pregnancy prevention (39%), the partner finding the act sexy or arousing, and to avoid the mess on clothes or underwear (17%). Although there were no significant gender differences in reporting their partners finding extra-vaginal ejaculation sexy or arousing, fewer women reported finding extravaginal ejaculation sexy or arousing themselves compared to men (23% of women, 38% of men). In addition to gender, age and race/ethnicity were also found to be associated with finding extravaginal ejaculation sexy/arousing (Table 3). In the adjusted model, young adults aged 25-29 were more likely to report finding extra-vaginal ejaculation sexy/arousing compared to those aged 18-24 (aOR=2.21; 95% CI: 1.22, 3.99). Women and non-White racial minorities were less likely to report finding extra-vaginal ejaculation sexy/arousing. Sexual minority individuals appeared to find ejaculating outside the vagina more sexy/arousing; however, these results were not statistically significant (likely due to smaller sample sizes in sexual minority groups).

During participants' most recent sexual event, 12.2% of respondents reported having used withdrawal at last penile-vaginal intercourse (95% CI: 10.6-14.0) while 20.8% (95% CI: 18.7-23.0) reported extra-vaginal/anal ejaculation (Figure 1). Reports of both withdrawal use and extra-vaginal/anal ejaculation were more often reported by younger female respondents. In the total sample and across all age categories, prevalence of ejaculating outside the vagina or anus

was significantly greater than prevalence of selecting withdrawal use from the contraceptive inventory.

Among 258 respondents who reported withdrawal at last sexual event, 14.5% reported ejaculation in the vagina or anus (with or without a condom), while 51.2% reported ejaculating on the woman's back, belly, buttocks or legs, 2.7% reported ejaculating in their partner's mouth or on their face, and 9.7% reported ejaculating on the sheets, towel, carpet, or bed (Table 4).

Among 1,871 respondents who did not report withdrawal use at last sexual event, 11.8% (n=220) reported ejaculating somewhere other than the vagina or anus.

Discussion

Using data from a 2018 U.S. nationally representative probability study, we compared two methods of measuring withdrawal: 1) contraceptive withdrawal within a list of other contraceptive methods and 2) defining extra-vaginal ejaculation based on the reported location of ejaculation. Extra-vaginal ejaculation was common among Americans, with approximately 60% of Americans aged 14-49 years reporting any extra-vaginal ejaculation in the past year and 20% engaging in this behavior most of the time. During participants' most recent penile-vaginal sexual event, 12% reported contraceptive withdrawal, but 21% reported ejaculating somewhere other than the vagina or anus. A lack of concordance was observed between respondents' reports of withdrawal and extra-vaginal/anal ejaculation. Nearly twice as many respondents indicated extra-vaginal/anal ejaculation compared to the proportion that indicated having used withdrawal, and this difference was observed across all age groups surveyed. Ejaculation location was not consistent with withdrawal use in approximately 12-14% of individuals.

Based on our study findings, both pregnancy prevention and perceived sexual pleasure enhancement are common reasons for engaging in extra-vaginal ejaculation. Men were more likely than women to find ejaculating outside the vagina sexy or arousing, though men tend to perceive that their female partners also found the act pleasurable. These gender differences are consistent with previous studies finding that some women do not always have a say in contraception choice or would engage in pulling out to fulfill their male partner's preferences [14, 20]. More young adults between ages 25 to 29 found extra-vaginal ejaculation sexy/arousing than other age groups. White individuals were also more likely to perceive extra-vaginal ejaculation as sexy or arousing compared to those of other races/ethnicities. More sexual minority individuals, or those who self-identified their sexual orientation as not heterosexual, appeared to find the act sexy/arousing compared to heterosexual individuals. However, our results were not statistically significant due to smaller sample sizes in the minority groups. Future studies may consider using larger samples of sexual minority groups to explore potential differences associated with sexual orientation/identity and ejaculation practices.

Traditional methods of measuring withdrawal may underestimate "pulling out" for reasons other than pregnancy or infection risk reduction. Past studies have shown that reasons for withdrawal use were often linked to sexual pleasure, including the belief that condom use reduces sexual pleasure or that condomless sex increases intimacy and trust in a relationship [7, 14, 15, 17, 20, 21]. A content analysis on pornography showed that extra-vaginal ejaculation was highly common in pornographic videos [23], and a small qualitative study found that men desired to ejaculate on a woman's face despite many of them holding beliefs that facial ejaculation was degrading to women, and that women would not enjoy it [24]. Given the increasing accessibility of erotic media in recent years, studying connections to media

consumption and sexual behaviors is important to understanding extra-vaginal/anal ejaculation for sexual pleasure.

These findings have implications for how withdrawal use is monitored in sexual health surveillance surveys, is measured for scientific research, fits into one's sexual repertoire and its effect on sexual health, and how providers discuss withdrawal with their patients during clinical interactions. Even though contraceptive withdrawal is less efficacious in preventing pregnancy compared to other hormonal methods, many individuals do choose to engage in withdrawal use in various relational and situational contexts. Therefore, it is critical to acquire and relay valid information to the general population about this practice, which is certainly relevant to contraceptive efforts. Research studies that assess individuals' or couples' use of contraceptive methods might consider more plainly asking where ejaculation occurs rather than asking about "withdrawal" or "pulling out," as these terms may lack specificity and shared meaning.

To our knowledge, this is the first study to directly compare the measurement of contraceptive withdrawal with extra-vaginal ejaculation using a nationally representative probability sample. Though our data was able to demonstrate the inconsistencies of these measures and broadly address the reasons for engaging in extra-vaginal ejaculation, we have limited data to further explore other potential factors associated with extra-vaginal ejaculation. We did not collect any data on reasons for engaging in extra-vaginal/anal ejaculation at the event level, location of sexual encounter, pregnancy intentions, use of medications of the presence of disorders affecting semen volume, perceptions of condoms and pulling out associated with sexual pleasure and STI prevention, or prior exposure to pornography or erotic media. Subsequent research might examine these issues more deeply as well as empirically test reliable and valid ways of asking about extra-vaginal/anal ejaculation. Our study was also limited by that

fact that we only had information on individuals in partnerships but do not have data from both partners. Future studies may consider recruiting partner dyads to compare couple concordance regarding engagement in extra-vaginal/anal ejaculation.

Conclusions

Inconsistencies in measurement suggest the need to more precisely measure "withdrawal" and extra vaginal/anal ejaculation. Subsequent research should examine reasons for potential distinctions between reports of withdrawal and extra-vaginal/anal ejaculation, including the influence of erotic media, sexual pleasure, sexual identity or orientation (including extra-anal ejaculation in men's same-sex encounters), as well as dual contraceptive use.

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Table 1. Weighted Demographic Characteristics of Individuals Reporting Penile-Vaginal Intercourse within the Past Year

	Men	Women	Total
	(N=1354)	(N=1472)	(N=2826)
Characteristics	% (n)	% (n)	% (n)
Age			
14-17	2.2 (29)	1.8 (27)	2.0 (57)
18-24	9.7 (132)	10.7 (158)	10.2 (289)
25-29	19.3 (261)	23.1 (340)	21.3 (601)
30-39	35.1 (475)	34.4 (506)	34.7 (981)
40-49	33.7 (457)	29.9 (440)	31.8 (897)
Race/Ethnicity			
White, non-Hispanic	57.3 (776)	59.9 (881)	58.6 (1657)
Black, non-Hispanic	12.5 (169)	13.4 (197)	13.0 (366)
Other, non-Hispanic	6.4 (87)	7.4 (108)	6.9 (195)
Hispanic	22.1 (299)	17.7 (261)	19.8 (560)
Multiple races/ethnicities	1.7 (23)	1.7 (25)	1.7 (48)
Adult/Parent Education			
Less than high school	11.6 (157)	7.7 (114)	9.6 (270)
High school	27.5 (373)	21.8 (321)	24.6 (694)
Some college	27.7 (374)	31.7 (466)	29.8 (841)
Bachelor's degree or higher	33.3 (450)	38.8 (571)	36.1 (1021)
Adult/Parent Household Income			
<\$25,000	7.9 (108)	12.3 (182)	10.2 (289)
\$25,000-\$49,999	15.1 (204)	18.0 (265)	16.6 (469)
50,000-\$74,999	17.3 (234)	17.5 (258)	17.4 (492)
>=\$75,000	59.7 (808)	52.2 (768)	55.8 (1576)
Current Relationship Status			
Single, not dating	9.7 (131)	9.0 (132)	9.3 (262)
Dating	8.7 (118)	7.6 (111)	8.1 (229)
In a relationship	22.9 (310)	25.3 (372)	24.2 (682)
Married	58.8 (795)	58.1 (853)	58.4 (1648)

Table 2. Frequency and Reasons for Ejaculating Somewhere Other than the Vagina during Penile-Vaginal Intercourse in the Past Year

	Men, Self-Report	Women, Male Partner	Total
	%(n)	% (n)	% (n)
Frequency of ejaculation somewhere other than the vagina	N=1339	N=1456	N=2795
Never	37.3 (500)	41.5 (605)	39.5 (1104)
A few times	35.4 (474)	34.0 (494)	34.7 (969)
Often	6.7 (90)	4.6 (67)	5.6 (156)
Most of the time	20.6 (275)	20.0 (290)	20.2 (566)
Reason for ejaculating somewhere other than the vagina	N=824	N=843	N=1667
My partner finds it sexy/arousing	37.4 (308)	42.5 (359)	40.0 (667)
I find it sexy/arousing*	38.2 (315)	22.7 (191)	30.4 (506)
To prevent pregnancy	40.4 (333)	37.2 (313)	38.8 (646)
My partner doesn't/I don't like how ejaculate feels inside her/my vagina	7.2 (59)	7.2 (61)	7.2 (120)
My partner doesn't/I don't like the mess on her/my clothes or underwear later	14.8 (122)	18.9 (160)	16.9 (281)
Other*	4.8 (39)	10.4 (88)	7.6 (127)

^{*}p<0.05

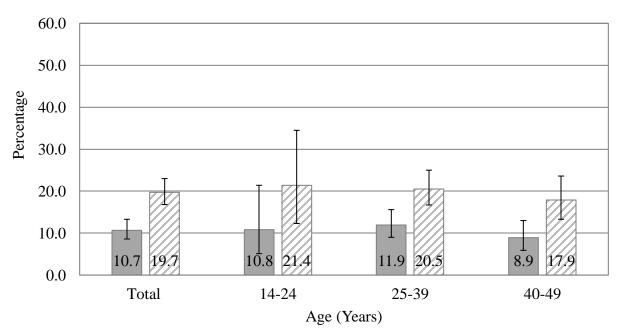
Table 3. Factors Associated with Finding Extra-Vaginal Ejaculation Sexy/Arousing

	Unadjusted Model		Adjusted Model	
Characteristics	OR	(95% CI)	aOR	(95% CI)
Age				
14-17	0.77	(0.31, 1.91)	0.71	(0.27, 1.82)
18-24	1.00		1.00	
25-29	2.06	(1.15, 3.67)*	2.21	(1.22, 3.99)*
30-39	1.68	(0.97, 2.92)	1.61	(0.91, 2.83)
40-49	1.61	(0.92, 2.83)	1.52	(0.85, 2.71)
Gender				
Male	1.00		1.00	
Female	0.47	(0.36, 0.62)*	0.46	(0.35, 0.60)*
Race/Ethnicity				
White, non-Hispanic	1.00		1.00	
Black, non-Hispanic	0.68	(0.46, 1.01)	0.66	(0.44, 1.00)*
Other, non-Hispanic	0.48	(0.23, 1.02)	0.44	(0.21, 0.91)*
Hispanic	1.08	(0.75, 1.54)	1.03	(0.72, 1.48)
Multiple races/ethnicities	0.39	(0.17, 0.85)*	0.39	(0.17, 0.89)*
Sexual Orientation				
Heterosexual	1.00			
Gay or lesbian	3.58	(0.50, 25.73)		
Bisexual	1.27	(0.77, 2.09)		
Asexual or other	1.46	(0.42, 5.00)		
Current Relationship Status				
Single, not dating	1.00			
Dating	0.94	(0.49, 1.79)		
In a relationship	0.99	(0.60, 1.62)		
Married	0.92	(0.58, 1.47)		

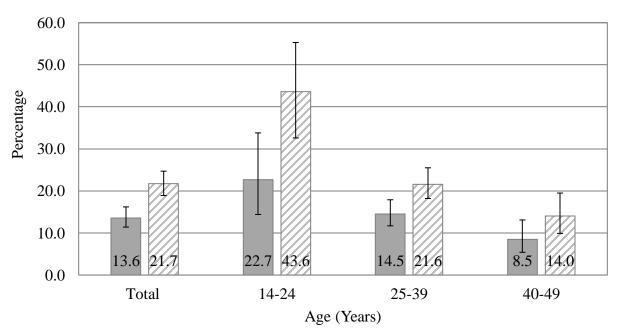
^{*}p<0.05

Figure 1. Percentage of Men and Women Who Reported Using Contraceptive Withdrawal versus Extra-Vaginal/Anal Ejaculation at Most Recent Penile-Vaginal Intercourse

(a) Men



(b) Women



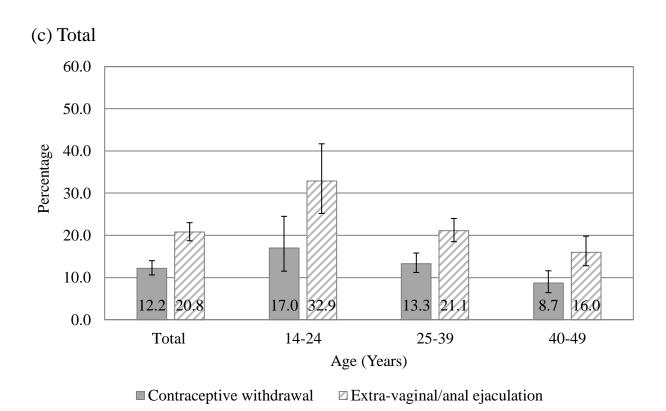


Table 4. Location of Ejaculation among Individuals Reporting Penile-Vaginal at Most Recent Sexual Event within the Past Year, Stratified by Gender and Withdrawal Status

	Men, Self-Report		Women, Male Partner		Total	
	No		No		No	
	Withdrawal (N=904)	Withdrawal (N=108)	Withdrawal (N=964)	Withdrawal (N=150)	Withdrawal (N=1868)	Withdrawal (N=258)
Location of Ejaculation	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
In the woman's vagina (no						
condom)	577 (63.8)	13 (11.8)	684 (70.7)	3 (1.8)	1261 (67.5)	16 (6.0)
In the woman's vagina						
(condom was still on)	199 (22.0)	6 (6.0)	162 (16.7)	14 (9.5)	361 (19.3)	20 (8.1)
In the woman's anus (no						
condom)	11 (1.3)	0(0.0)	7 (0.7)	1 (0.7)	18 (1.0)	1 (0.4)
In the woman's anus						
(condom was still on)	0(0.0)	0(0.0)	1 (0.1)	0(0.0)	1 (0.1)	0(0.0)
In the woman's hands	3 (0.3)	3 (2.7)	4 (0.4)	1 (0.7)	7 (0.4)	4 (1.5)
In the woman's mouth	19 (2.1)	5 (4.8)	8 (0.8)	12 (8.0)	27 (1.5)	17 (6.7)
On the woman's back,						
belly, buttocks, or legs	39 (4.4)	61 (56.8)	46 (4.8)	71 (47.1)	85 (4.6)	132 (51.2)
On the woman's face	10 (1.1)	1 (0.5)	8 (0.9)	0(0.0)	18 (1.0)	1 (0.2)
In the man's hands	21 (2.3)	10 (9.1)	13 (1.3)	17 (11.3)	34 (1.8)	27 (10.4)
In the man's underwear or						
pants	3 (0.4)	0(0.0)	0(0.0)	1 (0.7)	3 (0.2)	1 (0.4)
On the sheets, towel,						
carpet, or bed	12 (1.3)	6 (6.0)	21 (2.2)	19 (12.4)	33 (1.8)	25 (9.7)
Other	10 (1.1)	3 (2.2)	10 (1.0)	11 (7.7)	20 (1.0)	14 (5.4)