

Young Women's Contraceptive Decision Making: Do Preferences for Contraceptive Attributes Align with Method Choice?

CONTEXT: Understanding how women's preferences for certain attributes of contraceptive methods relate to their method choice can inform the content of contraceptive counseling.

METHODS: Data from 715 women aged 18–29 who had ever used contraceptives were drawn from the 2009 National Survey of Reproductive and Contraceptive Knowledge. Chi-square tests and multivariable logistic regression analyses were used to examine how women's preferences for specific contraceptive attributes were related to their social and demographic characteristics and their current contraceptive choice.

RESULTS: The majority of women considered it extremely important for a method to be very effective at preventing pregnancy (79%) and to be effective at preventing HIV and STDs (67%); fewer than one-quarter felt similarly about a method's being hormone-free (22%). Women who felt it was quite or extremely important for a method to be very effective at preventing pregnancy were not more likely to use the most effective methods than were women who considered this attribute not at all or only slightly important. Women who considered it quite or extremely important for a method to be hormone-free were less likely than others to use hormonal methods (odds ratio, 0.4), and women who considered STD protection quite or extremely important had elevated odds of relying on condoms alone, rather than on an effective contraceptive method alone (3.6).

CONCLUSIONS: Most women desire a very effective method for pregnancy prevention, but it is unclear how this translates to their contraceptive use. The associations between women's preferred contraceptive attributes and method choice warrant further attention.

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Despite the availability of a broad range of effective contraceptive methods, unintended pregnancy remains a significant public health problem in the United States.^{1,2} Currently, half of all pregnancies are unintended; the highest rate of unintended pregnancy is found among women aged 18–24.³ Efforts to curb unintended pregnancy have focused largely on increasing and improving contraceptive use among women.^{4–6} Although virtually all sexually active women who do not wish to become pregnant have used contraceptives at some point, nonuse and inconsistent use of contraceptives in any given year are common.⁷ In addition, dissatisfaction with contraceptive methods is high: Nearly 50% of female contraceptive users report that they have discontinued a method because of dissatisfaction.⁸ Method dissatisfaction has been associated with inconsistent use and frequent method switching, both of which are linked to a woman's risk of unintended pregnancy.⁶ Although method dissatisfaction and discontinuation have been linked to many variables, such as financial barriers and access to care, they may also be associated with the degree to which the methods women use match the method characteristics that they deem important, an area that has been relatively unexplored.^{9–12}

Contraceptive methods vary in several ways, including efficacy for pregnancy prevention, route of administration,

frequency of required use and side effect profiles. Women desiring contraception often have preferences for and perceptions of these various method characteristics. Early research on contraceptive attributes found that women perceived some methods to be safer, more effective and more convenient than others, and that the proportion using a given method was related to its perceived number of positive attributes.¹³ More recent research has tried to gain a more general sense of the attributes of contraceptive methods that are important to women, and has revealed several attributes that women deem important and consider when choosing a method.^{14–20} These include a method's effectiveness in preventing pregnancy, side effect profile, ease of use or convenience, effects on menstrual periods and interference with sexual pleasure.^{14–20} Some studies have found that the contraceptive attributes that women prefer vary by social and demographic characteristics (e.g., age and race); however, results have been inconsistent.^{14,15,19}

Although the attributes of contraceptive methods that are important to women are becoming better understood, much remains unknown about how women's preferences for specific attributes relate to their method choices. Determining if women's method choices are aligned with the attributes they care about can inform the content of contraceptive counseling and educational interventions.

A few studies have examined contraceptive attributes and their relation to contraceptive behavior, but either have included a limited number of attributes or have not examined associations with method choice.^{20,21} To our knowledge, only one study has explored how women's perceptions of several contraceptive attributes relate to their choice of a range of currently available methods.²² Looking at a sample of predominantly black and white women from a major U.S. metropolitan area, that study showed that women's preferences for certain attributes were associated with their method choice. For example, women who believed it was important for a method to be "long-lasting" or to be forgettable were more likely to choose the IUD, implant, injectable, ring or patch than to choose the pill. In addition, a belief that a method's effectiveness was important was associated with choice of the hormonal IUD rather than the pill; however, the effect size was modest. Although the study provides important findings, its geographic location limits its generalizability.

Using a nationally representative sample of young, unmarried women, a group with high rates of unintended pregnancy,³ our goal is to build upon this emerging evidence. First, we assess the relative importance women assign to several contraceptive attributes when choosing a method, and determine if the importance of these attributes differs by social and demographic characteristics. Second, we examine whether the importance women assign to particular contraceptive attributes is associated with their use of certain methods. We hypothesize that women who consider it important that a method be very effective, not contain hormones or protect against HIV and STDs are more likely than others to use the corresponding types of methods (i.e., most effective methods, nonhormonal methods and condoms, respectively).

METHODS

Sample and Data

We analyzed data from the 2009 National Survey of Reproductive and Contraceptive Knowledge, which assessed a range of attitudes and behaviors related to pregnancy planning and contraception among 1,800 unmarried 18–29-year-old women and men in the United States. Sampling was conducted so that weighted results are nationally representative in terms of gender, age, and race and ethnicity. Details of the sampling methodology can be found elsewhere.²³

For the present analysis, we examined data from the 897 women included in the sample. We excluded 165 women because they reported never having used a contraceptive method (and therefore were not asked questions regarding the contraceptive attributes important for decision making), three because they replied "don't know" or refused to answer the question asking whether they had ever used contraceptives, and 14 because they were missing data for one or more of the seven contraceptive attribute questions. Our final analytic sample consisted of the remaining 715 women. The Committee on the Protections of Human Subjects at the

University of California, Berkeley, judged this analysis to be exempt from review because the data were publicly available and de-identified.

Measures

For our first study objective, the dependent variables were seven contraceptive attributes assessed for their importance in contraceptive decision making. Respondents were asked "How important are each of the following characteristics to you in deciding which birth control method to use?" The seven characteristics were "It is very effective at preventing pregnancy"; "It has a low cost"; "It is easy to use"; "It doesn't contain hormones"; "It is acceptable to my partner"; "It doesn't interrupt sex"; and "It is effective at preventing HIV or STDs." Responses for each characteristic were coded on a four-point Likert scale; the options were "not at all important," "slightly important," "quite important" and "extremely important." Because of small cell sizes for some of the categories, for the bivariate and multivariate analyses, each attribute was dichotomized

TABLE 1. Percentage distribution of women who had ever used a contraceptive method, by selected characteristics, National Survey of Reproductive and Contraceptive Knowledge, 2009

Characteristic	% (N=715)
Age	
18–19	22.3
20–24	43.2
25–29	34.5
Race/ethnicity	
White	60.8
Black	21.0
Hispanic	12.8
Asian/other	5.4
Nativity	
United States	91.0
Other	9.0
Current sexual relationship	
Yes	68.8
No	31.2
Public assistance in past year	
Yes	18.2
No	81.8
Education status	
Currently in school	42.3
Not in school, ≤high school graduate	27.2
Not in school, ≥some college	30.5
Ever had women's health visit	
Yes	92.0
No	8.0
Insurance status in past year	
Public	24.1
Private	46.7
Other	13.1
Uninsured	16.1
Ever pregnant	
Yes	43.2
No	56.8
Current method use	
Yes	72.4
No	27.6
Total	100.0

Note: Percentages are weighted.

TABLE 2. Percentage distribution of women, by how important they considered selected contraceptive attributes for method choice

Contraceptive attribute	Extremely important	Quite important	Slightly important	Not at all important	Total
Very effective at preventing pregnancy	79.2	10.6	6.9	3.3	100.0
Low cost	23.7	22.1	34.9	19.3	100.0
Easy to use	48.8	25.9	20.2	5.1	100.0
Does not contain hormones	22.3	14.8	37.0	25.9	100.0
Acceptable to partner	32.1	18.3	25.9	23.7	100.0
Does not interrupt sex	31.9	17.5	26.3	24.3	100.0
Effective at preventing HIV/STDs	67.0	12.7	10.7	9.6	100.0

into “not at all or slightly important” versus “quite or extremely important.”

The contraceptive attributes were the key independent variables for our second objective; current contraceptive choice, which refers to sexually active women’s use of specific methods in the past month, was the dependent variable. Current contraceptive use served as a proxy for choice in this analysis. Women were asked if they had ever used the following: any contraceptive method approved by the Food and Drug Administration (the pill, vaginal ring, patch, injectable, IUD, implant, male or female condom, diaphragm, sponge and cervical cap), sterilization, withdrawal, natural family planning or emergency contraception. Women responding in the affirmative were then asked if they had used each method in the past month. Responses for emergency contraception were not examined because the method is used to prevent pregnancy following unprotected sex or contraceptive failure. To test our hypotheses, current contraceptive choice was further categorized by its effectiveness for pregnancy prevention, whether it involved hormonal method use and its level of STD protection.

Effectiveness for pregnancy prevention was a three-level ordinal variable that classified methods on the basis of published effectiveness rates for typical use: most effective (sterilization, IUD and implant), highly effective (pill, ring, patch and injectable) and less effective (condom, withdrawal and natural family planning).^{24,25} Women reporting use of more than one method were coded according to their most effective method.

Hormonal method use was a dichotomous variable indicating whether a woman used a method that contained hormones (pill, ring, patch, injectable or implant). Women using IUDs were excluded from this analysis because the survey did not differentiate between hormonal and non-hormonal IUDs.

STD protection was a three-level categorical variable indicating whether women used an effective method (sterilization, IUD, implant, pill, ring, patch or injectable) plus condoms (dual methods), condoms only or an effective contraceptive method only. Seventeen women reported relying on withdrawal and natural family planning, and were excluded from this analysis.

We examined a number of social, demographic and reproductive characteristics because they have been previously associated with U.S. women’s contraceptive method choice:^{7,8} age (18–19, 20–24 or 25–29); race or ethnicity

(white, black, Hispanic, Asian or other); nativity (United States or other); health insurance status in the past year (public, private, other* or uninsured); and dichotomous measures indicating whether women were currently in a sexual relationship with a man, had received public assistance in the past year, had ever had a women’s health care visit and had ever been pregnant. Because a large proportion of our sample reported being in school at the time of the survey, we created a variable that combined school status and highest educational attainment (currently in school; not in school, high school graduate or less; and not in school, some college or more).

Analyses

Univariate statistics were used to obtain the distribution of women by social and demographic variables, by all seven contraceptive preference variables according to level of importance and by contraceptive method choice. Because the attribute variables were on a Likert scale, a polychoric correlation matrix was run to examine associations between contraceptive attributes.²⁶ Rao-Scott chi-square tests were used to assess overall associations between the social and demographic variables and the contraceptive attributes, as well as current method choice.

To examine the association between contraceptive attributes and current method choice, we used bivariate and multivariate logistic regression. These analyses included only women reporting current method use; we excluded 209 women because they reported no contraceptive use in the past month, three because they reported contraceptive use in the last month but no sexual activity in the past year, and 31 because they reported use of “other” or unknown methods. Adjusted models controlled for the social and demographic variables that were associated with the outcome at $p < .10$. The hormonal method use and STD protection models were also adjusted to account for women’s preferences for a very effective method. The women’s health visit variable was not considered for this analysis, because only 27 women currently using a contraceptive method lacked a visit.

Multinomial logistic regression was used for the outcome variables with more than two categories—i.e., effectiveness

*The “other” category included women reporting both public and private sources of insurance, as well as a small number of women reporting some other source.

for pregnancy prevention and STD protection. (Ordinal logistic regression was not used for the analysis examining the importance of effectiveness and method use categorized by method effectiveness because the proportional odds assumption was not met in multivariate models.) All analyses were conducted using SAS 9.3. Appropriate sample weight and design variables were applied using SAS survey procedures. Significance was noted at $p < .05$.

RESULTS

Descriptive and Bivariate Analyses

The largest proportion of women in our sample were between 20 and 24 years of age (43%—Table 1). The majority were white (61%), born in the United States (91%) and in a current sexual relationship (69%). Eighteen percent reported receiving public assistance in the past year, and 42% were currently in school. The vast majority of women reported ever having had a women's health visit (92%), and nearly half (47%) reported having private insurance in the past year. Some 43% of the women had ever been pregnant, and 72% were currently using a contraceptive method.

The attributes that the highest proportions of women reported to be extremely important were effectiveness at

preventing pregnancy (79%), effectiveness at preventing HIV or STDs (67%) and ease of use (49%—Table 2). Fewer than one-quarter of the women (22–24%) reported that having a method be hormone-free or low-cost was extremely important to them. About one-quarter of the sample (24–26%) perceived the presence of no hormones, acceptability to partner and interruption of sex to be not at all important.

The only contraceptive attribute variables that were correlated with each other were low cost and ease of use ($r=0.44$, $p < .001$). Fifteen percent of women considered only one attribute extremely important, 20% considered two, 20% three, 19% four and 20% five or more; the remaining women did not consider any attribute to be extremely important. Of those who selected only one as extremely important, 61% chose effectiveness in preventing pregnancy.

In bivariate analyses (Table 3), women who were in current sexual relationships were more likely than those who were not to consider ease of use quite or extremely important for method choice (78% vs. 67%). A greater proportion of women who had received public assistance in the past year than of those who had not reported a preference for no hormones (51% vs. 34%). A higher proportion of women who were not in school and had a high school education or less than of those who were in school

TABLE 3. Percentage of women rating contraceptive attributes quite or extremely important, by selected characteristics

Characteristic	Very effective at preventing pregnancy	Low cost	Easy to use	Does not contain hormones	Acceptable to partner	Does not interrupt sex	Effective at preventing HIV/STDs
Age							
18–19	88.9	46.8	69.7	44.7	57.7	45.0	82.6
20–24	87.1	45.1	76.3	30.4	49.6	48.5	76.9
25–29	93.9	46.0	75.9	40.6	46.7	53.5	81.4
Race/ethnicity							
White	90.7	46.4	74.3	35.4	51.3	48.4	76.8
Black	87.5	40.7	75.8	37.8	44.1	53.2	84.8
Hispanic	89.5	55.8	80.5	50.8	57.6	48.6	85.7
Asian/other	90.7	35.0	59.7	21.9	47.4	48.2	78.6
Nativity							
United States	89.7	45.1	74.3	36.5	49.9	49.2	79.1
Other	92.0	53.0	78.3	43.4	55.9	51.6	86.2
Current sexual relationship							
Yes	90.1	45.2	78.1*	39.1	54.0	51.4	77.8
No	89.3	46.9	67.1	32.7	42.4	44.9	83.9
Public assistance in past year							
Yes	93.0	46.7	81.9	51.1*	59.9	57.5	85.6
No	89.1	45.7	72.9	34.1	48.4	47.7	78.7
Education status							
Currently in school	90.0	49.7	71.3	35.5*	50.0	47.7	79.8
Not in school, ≤high school graduate	90.2	44.3	79.6	48.8	56.5	58.0	82.2
Not in school, ≥some college	89.3	41.7	74.8	29.0	45.5	44.1	77.4
Ever had a women's health visit							
Yes	90.1	47.0	75.0	37.0	50.1	49.3	79.5
No	86.8	32.3	71.0	39.2	54.2	50.3	82.1
Insurance status in past year							
Public	86.7	43.7	76.3	38.4	60.1	54.6	85.5
Private	90.3	44.5	75.7	30.5	49.1	51.0	76.1
Other	95.0	48.3	67.6	41.2	48.7	43.3	85.0
Uninsured	89.3	50.5	74.9	51.2	41.1	42.0	77.3
Ever pregnant							
Yes	86.0*	45.3	75.8	45.7*	54.0	52.9	80.9
No	92.8	46.1	73.8	30.6	47.7	46.7	78.8

*Overall distribution differs among categories at $p < .05$. Note: Percentages are weighted.

or who were out of school but had at least some college education felt that it was quite or extremely important for their method to be hormone-free (49%, compared with 36% and 29%.) Women who reported a past pregnancy were less likely than others to feel it was quite or extremely important for a method to be very effective for pregnancy

prevention (86% vs. 93%) and more likely to report a preference for a hormone-free method (46% vs. 31%).

When we examined the most effective method a woman used for pregnancy prevention, we found that the majority relied on pills or condoms (48% and 21%, respectively—Table 4). Seventy percent of women reporting current method use were using a hormonal method; 33% reported dual method use.

TABLE 4. Percentage distribution of women, by selected characteristics of current contraceptive method

Characteristic	% (N=503)
Effectiveness for pregnancy prevention	
Most effective	
Sterilization	3.1
IUD	6.7
Implant	0.1
Highly effective	
Pill	47.5
Ring	6.1
Patch	1.1
Injectable	6.4
Less effective	
Condoms	20.5
Withdrawal	2.9
Natural family planning	0.3
Other/unknown method	5.2
Hormonal method†	
Yes	69.5
No	30.5
STD prevention	
Dual methods	32.5
Condoms only	22.4
Effective contraceptive method only	45.1
Total	100.0

†Pill, ring, patch, injectable or implant. Note: Percentages may not total 100.0 because of rounding.

Regression Analyses

•**Effectiveness for pregnancy prevention.** We found no association between how important women consider it that a method be very effective at preventing pregnancy and current method choice (Table 5). Pregnancy history was the only significant predictor of use of the most effective methods; women who had never been pregnant had reduced odds of using the most effective methods, rather than highly effective ones (odds ratio, 0.3). The only predictors of the use of less effective methods were race and insurance status. Compared with white women, all other groups were more likely to use less effective methods rather than highly effective ones (3.4–4.6). And compared with uninsured women, those with public insurance and those with private insurance had lower odds of using a less effective method, rather than a highly effective method (0.3 for each).

•**Hormonal method use.** After potential confounders, including women's perception of the importance of effectiveness in pregnancy prevention, were controlled for, women who reported that it was quite or extremely important that a method be hormone-free were less likely than those who felt a hormone-free method was not at all or slightly important

TABLE 5. Odds ratios (and 95% confidence intervals) from multinomial logistic regression analyses assessing associations between selected characteristics and the use of most effective or less effective contraceptive methods, rather than highly effective methods

Characteristic	Most effective		Less effective	
	Unadjusted	Adjusted	Unadjusted	Adjusted
Importance of method's effectiveness at preventing pregnancy				
Not at all/slightly (ref)	1.00	1.00	1.00	1.00
Quite/extremely	0.83 (0.22–3.19)	0.91 (0.23–3.66)	0.91 (0.30–2.81)	1.25 (0.39–3.98)
Age	1.11 (0.99–1.25)	1.10 (0.96–1.25)	0.97 (0.88–1.06)	0.96 (0.87–1.06)
Race/ethnicity				
White (ref)	1.00	1.00	1.00	1.00
Black	3.58 (1.35–9.48)	1.97 (0.69–5.64)	3.39 (1.47–7.79)	3.42 (1.38–8.46)
Hispanic	2.86 (1.04–7.89)	1.49 (0.48–4.68)	5.06 (2.38–10.74)	4.62 (1.97–10.81)
Asian/other	0.28 (0.06–1.22)	0.24 (0.05–1.17)	4.65 (1.61–13.41)	3.98 (1.14–13.89)
Current sexual relationship				
Yes (ref)	1.00	1.00	1.00	1.00
No	0.25 (0.09–0.76)	0.32 (0.10–1.02)	0.56 (0.27–1.14)	0.70 (0.33–1.49)
Insurance status in past year				
Uninsured (ref)	1.00	1.00	1.00	1.00
Public	0.97 (0.28–3.41)	0.67 (0.16–2.84)	0.47 (0.18–1.25)	0.32 (0.11–0.91)
Private	0.24 (0.07–0.84)	0.39 (0.08–1.84)	0.29 (0.13–0.66)	0.33 (0.13–0.81)
Other	1.44 (0.36–5.78)	1.68 (0.35–7.97)	0.68 (0.22–2.05)	0.34 (0.10–1.17)
Ever pregnant				
Yes (ref)	1.00	1.00	1.00	1.00
No	0.15 (0.06–0.39)	0.30 (0.10–0.93)	0.55 (0.30–1.04)	0.73 (0.33–1.63)

Notes: Most effective methods are sterilization, the IUD and the implant. Highly effective methods are the pill, ring, patch and injectable. Less effective methods are condoms, withdrawal and natural family planning. The final sample size for the adjusted model was 471. ref=reference group.

TABLE 6. Odds ratios (and 95% confidence intervals) from multivariable logistic regression analyses assessing associations between selected characteristics and use of a hormonal method

Characteristic	Unadjusted	Adjusted
Importance of a method's being hormone-free		
Not at all/slightly (ref)	1.00	1.00
Quite/extremely	0.40 (0.21–0.75)	0.43 (0.22–0.84)
Importance of method's effectiveness at preventing pregnancy		
Not at all/slightly (ref)	1.00	1.00
Quite/extremely	1.23 (0.44–3.46)	1.16 (0.44–3.03)
Race/ethnicity		
White (ref)	1.00	1.00
Black	0.25 (0.11–0.54)	0.25 (0.11–0.58)
Hispanic	0.18 (0.09–0.38)	0.22 (0.09–0.50)
Asian/other	0.23 (0.08–0.65)	0.24 (0.07–0.78)
Current sexual relationship		
Yes (ref)	1.00	1.00
No	2.06 (1.02–4.16)	1.67 (0.76–3.70)
Insurance status in past year		
Uninsured (ref)	1.00	1.00
Public	1.73 (0.68–4.41)	2.23 (0.80–6.21)
Private	3.42 (1.53–7.66)	2.66 (1.04–6.83)
Other	1.18 (0.41–3.43)	2.05 (0.64–6.54)
Ever pregnant		
Yes (ref)	1.00	1.00
No	2.16 (1.20–3.98)	1.19 (0.54–2.63)

Notes: Hormonal methods are the pill, ring, patch, injectable and implant. The final sample size for the adjusted models was 435. ref=reference group.

to be users of hormonal contraceptives (odds ratio, 0.4—Table 6). Racial or ethnic minorities were less likely than whites to be using a hormonal method of contraception (0.2–0.3), and women with private insurance were more likely than uninsured women to be doing so (2.7).

•**STD protection.** We found a significant relationship between women's perception of the importance of STD protection in contraceptive decision making and the use of condoms, either with another method or alone (Table 7). Compared with women for whom it was not at all or slightly important that a method be effective for preventing HIV and STDs, women who reported that HIV and STD protection was quite or extremely important were more likely to use dual methods rather than an effective contraceptive method alone (odds ratio, 2.3); they also had elevated odds of relying on condoms alone rather than using an effective contraceptive method alone (3.6). The relationship between the importance of STD protection and method choice did not differ depending on a woman's perception of the importance of effectiveness for pregnancy prevention. Compared with white women, racial and ethnic minorities were more likely to rely on condoms alone rather than on an effective contraceptive method alone (3.0–4.6). And finally, women with no current sexual relationship were less likely than others to be using dual methods rather than an effective method alone (0.4).

DISCUSSION

Our exploration revealed that certain contraceptive attributes important to women correspond with their contraceptive method choices, while others do not. As

has been found in other studies,^{14,17,19} we found that a vast majority of young, unmarried women consider a method's effectiveness in preventing pregnancy to be very important when choosing a contraceptive method. However, this preference was not associated with the use of more effective methods. By contrast, Madden et al. found that a belief that effectiveness was important was associated with the choice of a hormonal IUD (but not of the other most effective methods).²² Our finding may reflect that women's perceptions of contraceptive effectiveness do not match the objective, clinical standards of effectiveness.^{27,28} Also, other attributes, not measured in this survey, may help explain our finding. For example, some women may desire a very effective method, but not want a method placed inside their bodies. Interestingly, we found that pregnancy history was the only variable associated with women's considering the effectiveness of a method important; women who had been pregnant were less likely than others to report effectiveness as important. However, they were more likely than others to use the most effective methods (rather than highly effective ones). It is not immediately clear what accounts for the difference between perceived importance and method choice.

A substantial proportion of the young women felt it was important that a method be hormone-free, and these women were indeed less likely than others to be using a hormonal method. Similarly, in unadjusted analyses, Garbers et al. found that women at risk for unintended pregnancy who did not receive a method at the end of a reproductive health visit were more likely than those who did to prefer a hormone-free method.²¹ The association we found remained significant even after the fact that the vast majority of women believed it was important for a method to be very effective at pregnancy prevention was accounted for. Given that the majority of the most effective methods are hormonal, a preference for a very effective method may conflict with a preference for no hormones for women who consider both important. The nonhormonal IUD may be an option for such women and should be considered by providers when counseling their patients. We were unable to examine whether a preference for no hormones is associated with nonhormonal IUD use because the survey did not differentiate between hormonal and nonhormonal IUDs; future studies should explore this area. Also, our results may suggest the need for the development of additional highly effective, nonhormonal contraceptive options. Although fewer than one-quarter of women believed it was extremely important to have a method without hormones, we found significant differences by receipt of public assistance, level of education and pregnancy history. Some unmeasured variable, such as previous experiences with hormonal methods, may be driving these associations.

A preference for a method that prevents STDs and HIV corresponded with condom use, either alone or with an effective contraceptive method. Our finding that two-thirds of women considered STD and HIV protection extremely important when choosing a contraceptive is noteworthy because of the limited options of contraceptives meeting

TABLE 7. Odds ratios (and 95% confidence intervals) from multinomial logistic regression analyses assessing associations between selected characteristics and dual method use or condom use alone, rather than use of an effective contraceptive method alone

Characteristic	Dual methods		Condom alone	
	Unadjusted	Adjusted	Unadjusted	Adjusted
Importance of method's effectiveness at preventing HIV/STDs				
Not at all/slightly (ref)	1.00	1.00	1.00	1.00
Quite/extremely	2.21 (1.03–4.74)	2.34 (1.06–5.14)	3.46 (1.36–8.78)	3.62 (1.24–10.55)
Importance of method's effectiveness at preventing pregnancy				
Not at all/slightly (ref)	1.00	1.00	1.00	1.00
Quite/extremely	0.72 (0.20–2.69)	0.68 (0.20–2.40)	1.05 (0.27–4.03)	1.12 (0.26–4.77)
Race/ethnicity				
White (ref)	1.00	1.00	1.00	1.00
Black	1.67 (0.70–4.01)	1.03 (0.39–2.77)	3.44 (1.34–8.78)	3.00 (1.14–7.86)
Hispanic	1.49 (0.65–3.42)	0.81 (0.30–2.20)	4.84 (2.04–11.47)	3.73 (1.44–9.63)
Asian/other	1.54 (0.45–5.28)	1.28 (0.35–4.77)	6.19 (1.79–21.43)	4.55 (1.11–18.65)
Current sexual relationship				
Yes (ref)	1.00	1.00	1.00	1.00
No	0.46 (0.20–1.05)	0.43 (0.20–0.94)	0.52 (0.24–1.11)	0.57 (0.25–1.33)
Insurance status in past year				
Uninsured (ref)	1.00	1.00	1.00	1.00
Public	1.79 (0.56–5.75)	1.40 (0.41–4.76)	0.66 (0.22–1.99)	0.40 (0.13–1.26)
Private	0.89 (0.34–2.30)	1.01 (0.37–2.80)	0.37 (0.15–0.94)	0.37 (0.14–1.02)
Other	4.11 (1.17–14.4)	4.01 (0.98–16.37)	1.11 (0.31–4.03)	0.49 (0.11–2.24)
Ever pregnant				
Yes (ref)	1.00	1.00	1.00	1.00
No	0.48 (0.24–0.95)	0.68 (0.31–1.51)	0.49 (0.24–0.98)	0.77 (0.31–1.88)

Notes: Effective methods are sterilization and the IUD, implant, pill, ring, patch and injectable. The final sample size for the adjusted models was 454. ref=reference group.

this standard. A preference for a very effective method of pregnancy prevention and STD and HIV protection were the attributes that the greatest proportions of young, unmarried women rated as extremely important. This may highlight the need for counseling and other interventions to promote dual method use, which can address both of these attributes. While such use has become more prevalent in recent years, it remains less common among young adults than single-method use.⁷

Notably, as in other studies, race or ethnicity was associated with method choice in several of the adjusted models.^{7,29} Black and Hispanic women were far less likely than white women to use a hormonal method, and were more likely to use less effective methods of contraception and to rely on condoms. These findings are important because black and Hispanic women have higher rates of unintended pregnancy than white women in the United States.^{2,30} Additional research is needed to better understand these findings. Other contraceptive attributes, not included in this study, may be important for racial and ethnic minorities.

Limitations and Strengths

This study has several limitations. One consideration is the lack of variety in the contraceptive methods that women were currently using. The small numbers of women who reported use of several methods (e.g., IUDs, implants,

vaginal ring, patch) affected our ability to assess the associations between contraceptive attributes and specific methods. Further, we were unable to examine whether the low levels of use of the most effective methods reflected limited availability of and barriers to accessing these methods during this time, which undoubtedly would have influenced women's method choices and the relationship between attribute preferences and choice. The Affordable Care Act has reduced financial barriers and thus increased access to the full range of contraceptive methods;^{31,32} similar research assessing associations since the act's implementation are warranted. Additionally, only seven contraceptive attributes were available in the survey. A number of others are important to women (e.g., side effect profile, ability to alleviate menstrual cramps, effect on sexual pleasure).^{15,16,22} Further, because women were not instructed to rank the importance of various contraceptive attributes, we were unable to explore whether the priority they gave to each was associated with contraceptive method choice. Another limitation is the potential influence of unmeasured confounders, such as previous experiences with specific contraceptive methods, which may have affected the association between women's perceptions of contraceptive attributes and method choice. In addition, because this study utilizes cross-sectional data, causal inferences cannot be made. Finally, the issue of temporality is unclear. Our assumption is that women's assessment of contraceptive

attributes drives their method choice, but use of specific methods may drive perception of important attributes.

Strengths of this study include use of a nationally representative sample of young, unmarried adults. Further, this study is one of the few to link contraceptive attribute preferences to women's method choice.

Conclusion

Future research should assess how accurately women rate contraceptive methods in terms of the attributes that matter to them, as this may moderate the relationship between attributes and choice. Further, women's perceptions and conceptualizations of contraceptive effectiveness, particularly in relation to their preferences for other contraceptive attributes, warrant further attention. Additional work is also needed to better understand how contraceptive attribute preferences interact with each other to influence method choice. Contraceptive method choice is a complex decision, and women likely consider a variety of attributes when choosing a method. Qualitative work might be particularly helpful in teasing apart the trade-offs that women make regarding contraceptive attributes when choosing a method. Finally, as our results have limited generalizability beyond young, unmarried women, additional studies linking contraceptive attributes to method choice need to include women of all reproductive ages in a variety of relationship types.

Improving women's contraceptive use remains an important facet of reducing the high rate of unintended pregnancy in the United States. Assisting women in choosing methods that are consistent with contraceptive attributes that are important to them may increase method satisfaction and continuous use. Counseling interventions designed to achieve alignment between attribute preferences and method choice should be further investigated.

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