

# Women's Contraceptive Preference-Use Mismatch

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## Abstract

**Background:** Family planning research has not adequately addressed women's preferences for different contraceptive methods and whether women's contraceptive experiences match their preferences.

**Methods:** Data were drawn from the Women's Healthcare Experiences and Preferences Study, an Internet survey of 1,078 women aged 18–55 randomly sampled from a national probability panel. Survey items assessed women's preferences for contraceptive methods, match between methods preferred and used, and perceived reasons for mismatch. We estimated predictors of contraceptive preference with multinomial logistic regression models.

**Results:** Among women at risk for pregnancy who responded with their preferred method ( $n=363$ ), hormonal methods (non-LARC [long-acting reversible contraception]) were the most preferred method (34%), followed by no method (23%) and LARC (18%). Sociodemographic differences in contraception method preferences were noted ( $p$ -values  $<0.05$ ), generally with minority, married, and older women having higher rates of preferring less effective methods, compared to their counterparts. Thirty-six percent of women reported preference-use mismatch, with the majority preferring more effective methods than those they were using. Rates of match between preferred and usual methods were highest for LARC (76%), hormonal (non-LARC) (65%), and no method (65%). The most common reasons for mismatch were cost/insurance (41%), lack of perceived/actual need (34%), and method-specific preference concerns (19%).

**Conclusion:** While preference for effective contraception was common among this sample of women, we found substantial mismatch between preferred and usual methods, notably among women of lower socioeconomic status and women using less effective methods. Findings may have implications for patient-centered contraceptive interventions.

**Keywords:** contraception, reproductive health, patient-centered, patient preference, health service delivery, women's health

## Introduction

WHILE CONTRACEPTIVE METHODS like long-acting reversible contraception (LARC) are highly effective at preventing unintended pregnancies, high unintended pregnancy rates continue to be a national public health concern. Over half (54%) of U.S. unintended pregnancies are attributed to the 14% of “at risk” women who do not use contraception or use it inconsistently.<sup>1,2</sup>

Among various factors associated with contraceptive method use and continuation, increasingly, satisfaction appears to be important.<sup>3</sup> In a study of 1,489 women at 65 centers in Europe and South Africa, researchers found that higher satis-

faction rates among transdermal patch users were associated with higher adherence rates, compared to oral contraceptive (OC) users, who experienced both lower satisfaction rates and lower adherence rates.<sup>4</sup> The association between satisfaction rates and continuation rates was further demonstrated in the St. Louis Contraceptive CHOICE Project, in which LARC users exhibited both higher satisfaction (80% versus 54%) and continuation rates (86% vs. 55%) compared to OC users.<sup>5</sup> Indeed, the consequences of method dissatisfaction have been consistently described—dissatisfaction leads to discontinuation or switching to a less reliable method, or no method at all.<sup>5–8</sup>

Beyond satisfaction, less research has focused on women's preferences for contraceptive methods. The majority of

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literature has used choice as a proxy for preference by assuming women are choosing and then using their preferred method.<sup>9–11</sup> However, few, if any, studies have comprehensively described the unique construct of contraceptive method preference or estimated whether women are using their preferred methods, and subsequently identified what barriers may preclude preferred method use. One notable preference-based study of U.S. women at high risk of unintended pregnancy identified effectiveness, lack of side effects, and affordability as “extremely important” contraceptive features, but did not directly ask participants their preferred contraceptive method.<sup>12</sup>

Although method satisfaction has been well researched and associated with method continuation, more research is necessary to elucidate the connections between contraceptive preference, use, and continuation. Ultimately, a better understanding of contraceptive preference is needed to inform patient-centered models of care, promote women’s reproductive autonomy, address unmet family planning needs, and inform efforts to reduce unintended pregnancies for women in the United States.<sup>11–14</sup>

We described women’s contraceptive method preferences, use, and preference-use mismatch among a sample of reproductive-aged women in the United States and examined sociodemographic factors associated with method preferences and women’s reasons for preference-use mismatch.

## Materials and Methods

### Study design and sample

We analyzed data from the *Women’s Healthcare Experiences and Preferences Study*, our Internet-based survey of 1,078 U.S. women aged 18–55 conducted in September 2013. The study design and sample have been described elsewhere.<sup>15</sup>

GfK (Menlo Park, CA) fielded the survey among their national household random probability panel composed of 50,000 U.S. residents aged 13 and older. The GfK panel is sampled by probability-based address mailing (ABS) and random digit dialing (RDD) telephone methods. GfK uses a probability-based sampling of addresses from the U.S. Postal Service’s Delivery Sequence File for its ABS sample, and employs list-assisted RDD sampling techniques based on a sample frame of the U.S. residential landline telephone universe for the RDD sample. Oversampling in the RDD sample was conducted in telephone exchanges that had high concentrations of African American and Hispanic households based on census data. Thus, panel members come from listed and unlisted telephone numbers, telephone and nontelephone households, and cell phone-only households, as well as households with and without Internet access.

Panelists with no Internet connection or computer are provided computer access to participate. Panelists are provided a unique login information and responses are deidentified by GfK. Sociodemographic information is collected and updated to facilitate complex, stratified sampling designs. Incentive points (redeemable for cash, merchandise, gift cards, or game entries) are offered to encourage survey response. Among GfK panelists eligible for inclusion in the larger study (English-speaking women ages 18–55), 2,520 were randomly selected and emailed an invitation to participate.

Statistical weighting was computed in several stages to offset known sample selection deviations and address sources

of survey error, including nonresponse due to recruitment methods and panel attrition. These biases were incorporated in the sample’s base weight before the sample was drawn, which was then subjected to an iterative raking procedure to calibrate to national demographic benchmarks, including appropriate representation of groups of underrepresented women (*i.e.*, minority women, poor women) (more information on survey methodology can be found at [www.knowledgenetworks.com/ganp/reviewer-info.html](http://www.knowledgenetworks.com/ganp/reviewer-info.html)). This study was approved by the University of Michigan’s Institutional Review Board.

We adapted the standard parameters to define our “at risk” analytic sample,<sup>16</sup> so that women who were “at risk” for unplanned pregnancy were defined as follows: (1) aged 18–44, (2) sexually active with a male partner in the last 12 months, (3) not pregnant in the last 12 months, (4) not trying to get pregnant at the time of the study, (5) and not sterile by noncontraceptive reasons (*e.g.*, hysterectomy).

### Measures

The *Women’s Healthcare Experiences and Preferences Study* survey included 29 items designed to measure women’s preferences and experiences with health and healthcare. Information was also collected on sociodemographic characteristics, reproductive and health histories, health behavior and health service behavior intentions, and reproductive healthcare/policy knowledge and attitudes. The survey content was based on our previous work and existing reproductive health surveys (*e.g.*, the National Survey of Family Growth [NSFG]). We piloted the survey among 25 panelists for readability and comprehension before finalization. The Flesch-Kincaid Grade Level of the survey was 6.6 and the average completion time was 15 minutes.

In this study, we focused on a series of items that measured women’s experiences with and preferences for contraceptive methods.

Women were first asked, “What, if any, type of birth control method(s) did you and/or your partner use during your last sexual intercourse?” In our analysis, “method used” was treated as a covariate to characterize method preference. Multiple responses were possible and options included the following: “intrauterine device (IUD; for example, Mirena or Paragard); implant (for example, Implanon or Nexplanon); pills (for example, Ortho Tri-Cyclen or Yaz); patch (for example, Ortho Evra); ring (for example, Nuvaring); injectable (for example, Depo-Provera shot); condoms; withdrawal (“pulling out”); emergency contraception (“morning after pill”); other barrier methods (for example, diaphragm, sponge, cervical cap); other contraceptive method (please specify); or “We did not use a birth control method at last sex.”

Women who reported tubal ligation or male partner vasectomy in open responses were coded as “other permanent method.” Women were top coded to the most effective method reported (*e.g.*, if a woman reported using both “LARC” and “pills,” they were top coded to the more effective method - “LARC”).

We examined method use in multiple ways and present analyses that employed two categorical indicators: a 6-point method variable (permanent, LARC [IUD and implant], hormonal [non-LARC methods, including pills, patch, ring, injectable], condoms, withdrawal/other [including emergency contraception, other barrier methods, and other], or none); and

a 4-point variable based on Centers for Disease Control and Prevention (CDC) contraception effectiveness categories (none, less effective (condoms, withdrawal, other), effective (hormonal, non-LARC), and highly effective (LARC, permanent)).

Women were then asked, "If you could choose any type of birth control METHOD in the future, regardless of cost or other difficulties, what method would you MOST LIKE to use?" This variable served as our "preferred method" outcome. Response options were the same as for the use variable, with the additions of the following: "I do not need birth control (for example, because I only have sex with women or my male partner is infertile)"; "I prefer not to use a birth control method"; and "Don't know." We conducted sensitivity analyses to explore different iterations of our outcome variable (6 point, 4 point, binary) and results are similar, so we present the 6-point and 4-point variables for method preference as described above for use.

Finally, women were asked, "Are you currently using the type of birth control that you would MOST LIKE to use?" For those who responded "No," they were asked, "What is the reason(s) that you are not currently using the type of birth control that you would MOST LIKE to use?" Response options included a comprehensive list of 14 potential reasons, including an open-ended "some other reason," and women could select multiple reasons. Examples included the following: "Method is too expensive"; "Insurance does not cover that method"; "Health provider will not give you that type of method"; "Worried about side effects"; "Don't think you can get pregnant"; "Don't mind if you get pregnant"; and not having sex regularly.

We coded and sometimes collapsed specific reasons into the following ten constructed categories for data management and presentation purposes: (1) cost/insurance (*e.g.*, "Insurance does not cover that method"), (2) perceived/actual need (*e.g.*, "Don't think you can get pregnant"), (3) fear of side effects and health concerns (*e.g.*, "Worried about side effects of birth control"), (4) pregnancy ambivalence (*e.g.*, "Don't mind if you get pregnant"), (5) access/provider barriers (*e.g.*, "Health provider will not give you that type of method"), (6) contemplation/intention phase (*e.g.*, "Just started thinking about switching"), (7) method-specific preference concerns (*e.g.*, "Partner does not want you to use that method"), (8) perceived eligibility (*e.g.*, "Other health problems prevent you from using that method"), (9) convenience, and (10) other.

We examined all available demographic, social, and reproductive history covariates as "predictors" of method preference based upon our prior work,<sup>17</sup> including the following: age, race/ethnicity, educational attainment, marital status, income level, religious affiliation and service attendance, political party affiliation, type of health insurance, health service use, and pregnancy and childbirth history.

### Statistical analysis

We applied sampling weights and employed weighted statistical commands in SAS Studio 3.4 (Cary, NC). We used univariate statistics (weighted frequencies and proportions) to describe the sample's characteristics, contraceptive method preferences, and reasons for method preference-use mismatch. We used Pearson's Chi-square tests (Rao-Scott correction F-

statistic) to examine associations between contraceptive method preferred (6-point variable), used (6-point variable), and sociodemographic and reproductive characteristics.

We performed multivariable multinomial logistic regression to further identify sociodemographic predictors of contraceptive method preference (4-point variable, reference category = hormonal, non-LARC ["effective"]). We presented the 4-point preferred method outcome based upon effectiveness categories in the multinomial regression to satisfy statistical assumptions given that subsamples were insufficient for multiple regression analyses, as well as for ease of interpretation and clinical practice relevance. We examined models with and without contraceptive method use (as a covariate) included. For sociodemographic predictor variables that were collinear (*e.g.*, reproductive history variables), we retained those with strongest effects in final models.

Our final model included respondent age, race/ethnicity, educational attainment, marital status, income level, religious affiliation and service attendance, political party affiliation, type of health insurance, health service use, and pregnancy history. Results are presented as adjusted odds ratios with 95% confidence intervals. We considered two-tailed *p*-values of <0.05 significant.

### Results

Of the 2,520 randomly sampled GfK panelists who received the survey invitation, 43% ( $n = 1,078$ ) completed our study, and 414 women fell within our "at risk" analytic sample, with 363 women providing full data on our contraceptive preference variables. Compared to respondents, nonrespondents were more likely to be aged <30 years, identify as Black or Hispanic ethnicity, have less than high school education, and annual incomes of <\$25,000 (all *p*-values <0.01).

#### Characteristics of the sample

The characteristics of women eligible for our analysis ( $N = 414$ ) are described in Table 1. The majority of women had at least some college-level education (67%), had income <\$75,000 (58%), identified as White (66%), and had private, commercial, or employer-based health insurance (61%). Over half reported being currently or previously married (60%), or having a history of pregnancy (62%) or childbirth (58%).

Hormonal (non-LARC) contraceptive methods were the most frequently reported methods women used at last sexual encounter (36%), followed by condoms (13%), LARC (11%), permanent (8%), and withdrawal or other methods (6%); 26% reported using no method (Table 1).

#### Contraceptive method preference

Among women reporting preference for contraceptive methods ( $n = 363$ ), the most preferred methods were hormonal (non-LARC) methods (34%), followed by no method (23%), LARC (18%), condoms (11%), withdrawal/other (6%), and permanent methods (including tubal ligation) (6%) (Table 2).

In unadjusted analyses, contraceptive method preference varied by women's age, educational attainment, health service use frequency, marital status, pregnancy history, and childbirth history (*p*-values <0.05) (Table 2). Generally,

unmarried women and those with higher educational attainment preferred more effective methods, including LARC and hormonal (non-LARC) methods, than their counterparts. Older women, those who had not used health services in the past 5 years, and those with pregnancy and childbirth histories had higher preference rates for less effective methods

TABLE 1. SAMPLE CHARACTERISTICS

<i>Sociodemographic characteristics</i>	<i>Weighted proportion (%)</i>	<i>Weighted frequency (n)</i>
All women	100	414
Age group		
18–24 years	18.4	76
25–34 years	38.1	157
35–44 years	43.5	180
Educational attainment		
<High School	8.2	34
High School	24.9	103
Some college	32.2	133
≥Bachelor’s	34.7	144
Income		
<\$25,000	17.8	73
\$25–49,999	21.5	89
\$50–74,999	18.9	78
≥\$75,000	41.8	173
Race/ethnicity		
White, non-Hisp	65.5	271
Black, non-Hisp	9.2	38
Other, non-Hisp	9.1	37
Hispanic	16.3	67
Type of insurance		
Private	61.4	254
Medicaid/care	10.6	44
Other	7.6	31
None/Don’t know	20.3	84
Health service use past 5 years		
>Once per year	40.3	167
About once per year	36.4	150
<Once per year	16.3	67
Never	7.1	29
Religious affiliation		
Yes	75.9	314
No	24.1	100
Religious service attendance		
≥Weekly	21.9	89
Once or twice a month	10.8	44
A few times a year or less	42.2	171
Never	25.1	102
Political party		
Democrat	31.7	131
Republican	23.8	98
Independent/Other	13.6	56
None	30.9	127
Marital status		
Married/Previously married	59.9	248
Never married	24.5	101
Cohabiting	15.6	64

(continued)

TABLE 1. (CONTINUED)

<i>Sociodemographic characteristics</i>	<i>Weighted proportion (%)</i>	<i>Weighted frequency (n)</i>
<i>Reproductive history characteristics</i>		
Pregnancy (ever)		
Yes	62.0	254
No	38.1	156
Childbirth (ever)		
Yes	57.5	237
No	42.5	175
Contraceptive Method Use		
Permanent Method	7.9	31
LARC	10.6	42
Hormonal	36.3	142
Condoms	13.4	52
Withdrawal/Other	6.3	25
None	25.6	100

Results are from the subsample of 414 women “at risk” for pregnancy and thus eligible for our analysis. Results are presented as weighted proportions (%) and frequencies (n). Eight respondents did not indicate their religious service attendance, 2 respondents did not designate a political affiliation, 4 respondents did not indicate their pregnancy history, 1 respondent did not indicate their childbirth history, and 22 respondents did not indicate their contraceptive method used at last sexual intercourse. Ever use of hormonal methods was 77% (n = 317), and ever use of condoms was 93% (n = 386).

LARC, long-acting reversible contraception.

like condoms, withdrawal, or no method, compared to their counterparts (Table 2).

In multinomial regression models (Table 3), reproductive history, race/ethnicity, education, age, and religious attendance were predictive of contraceptive method preference. For example, compared to women with a history of pregnancy, those without a prior pregnancy were less likely to prefer a “highly effective” (LARC or permanent) method to an “effective” (hormonal, non-LARC) method (aOR 0.1, 95% CI 0.03, 0.4,  $p < 0.001$ ). Compared to White women, all minority groups were more likely to prefer “less effective” methods (condoms/other) to “effective” (hormonal, non-LARC) methods (aOR range 8.5–14 across different racial ethnic groups). Compared to women aged 18–24, older women were more likely to prefer no method to an “effective” (hormonal, non-LARC) method (aOR range 15–32 across age groups). Method preference effects by education varied across levels of educational attainment (Table 3).

*Mismatch between women’s contraceptive method preference and use*

Among women reporting preference-use mismatch (36%), the majority preferred more effective methods than those they were using (Table 4). For instance, 25% of condom users preferred hormonal (non-LARC) methods, 31% of withdrawal/other users preferred hormonal (non-LARC) methods, 15% of nonusers preferred hormonal (non-LARC) methods, and 18% of hormonal (non-LARC) users preferred LARC. Two-thirds (64%) of women reported that they were using their preferred method of contraception, and by method type, the proportions of match between methods used and preferred ranged from 32% to 76%. LARC users experienced

TABLE 2. WOMEN'S CONTRACEPTIVE METHOD PREFERENCE, BY SOCIODEMOGRAPHIC AND REPRODUCTIVE CHARACTERISTICS

	<i>Preferred contraceptive method</i>							<i>p-value</i>
	<i>%</i>	<i>Permanent (n=23)</i>	<i>LARC (n=67)</i>	<i>Hormonal, non-LARC (n=124)</i>	<i>Condoms (n=40)</i>	<i>Withdrawal/ other (n=23)</i>	<i>None (n=85)</i>	
All women (%)	100	6.4	18.3	34.3	11.0	6.5	23.4	
Age group (n=363)								<b>&lt;0.0001</b>
18–24 years (n=68)	18.2	0.4	19.3	65.4	10.6	1.7	2.8	
25–34 years (n=138)	38.1	3.2	28.6	33.1	12.1	4.0	19.0	
35–44 years (n=157)	43.5	11.9	9.0	21.9	10.3	10.7	36.3	
Educational attainment (n=363)								<b>0.0204</b>
<High School (n=31)	8.2	5.4	3.3	62.9	11.1	2.3	14.9	
High School (n=83)	24.9	5.3	16.1	23.6	15.9	4.1	35.0	
Some college (n=117)	32.2	7.9	23.4	28.3	5.7	11.6	23.2	
≥Bachelor's (n=132)	34.7	6.0	18.8	39.6	12.8	4.4	18.4	
Income (n=363)								0.8484
<\$25,000 (n=63)	17.8	4.2	16.1	43.6	13.9	2.7	19.5	
\$25–49,999 (n=78)	21.5	6.3	18.1	29.6	13.8	6.0	26.2	
\$50–74,999 (n=66)	18.9	6.6	12.3	27.9	9.7	11.1	32.4	
≥\$75,000 (n=155)	41.8	7.3	22.0	35.6	9.1	6.3	19.8	
Race/ethnicity (n=363)								—*
White, non-Hisp (n=236)	65.5	7.8	17.6	38.4	6.6	3.7	25.9	
Black, non-Hisp (n=30)	9.2	0	16.9	25.4	14.4	10.5	32.8	
Other, non-Hisp (n=35)	9.1	0	26.2	24.9	32.9	6.9	9.2	
Hispanic (n=62)	16.3	8.0	17.6	28.2	14.1	14.8	17.3	
Type of insurance (n=363)								—*
Private (n=221)	61.4	8.8	19.2	32.3	8.9	6.8	24.0	
Medicaid/care (n=38)	10.6	2.0	29.8	39.9	5.9	0	22.5	
Other (n=29)	7.6	0	21.1	51.3	15.4	3.9	8.3	
None/Don't know (n=75)	20.3	4.3	9.2	30.7	18.1	9.6	29.1	
Health service use past 5 years (n=363)								<b>0.0210</b>
>once per year (n=147)	40.3	9.1	19.1	38.7	8.8	3.3	21.0	
About once per year (n=134)	36.4	6.4	22.1	31.8	10.9	4.7	24.2	
<once per year (n=57)	16.3	1.1	13.9	34.3	19.6	9.7	21.4	
Never (n=24)	7.1	2.7	3.5	21.7	5.3	27.7	39.1	
Religious affiliation (n=363)								0.5685
Yes (n=276)	75.9	6.3	17.7	31.5	11.2	7.5	25.8	
No (n=87)	24.1	6.7	20.4	43.3	10.4	3.3	15.9	
Religious service attendance (n=355)								—*
≥Weekly (n=75)	21.9	9.8	10.0	36.8	12.9	4.6	26.0	
Once or twice a month (n=39)	10.8	7.5	23.0	40.4	10.6	0	18.5	
A few times a year or less (n=159)	42.2	6.1	21.5	24.3	9.4	10.1	28.6	
Never (n=82)	25.1	1.1	18.2	47.6	13.7	4.8	14.7	
Political party (n=361)								—*
Democrat (n=116)	31.7	2.5	22.0	38.6	10.9	7.5	18.6	
Republican (n=90)	23.8	14.1	13.9	27.7	6.7	8.5	29.0	
Independent/Other (n=50)	13.6	1.8	19.0	48.9	12.0	0	18.2	
None (n=105)	30.9	6.5	18.0	28.7	14.6	6.7	25.4	
Marital status (n=363)								<b>0.0006</b>
Married/Previously married (n=220)	59.9	9.6	13.9	28.6	10.0	8.3	29.7	
Never married (n=85)	24.5	0.6	24.2	53.0	10.5	3.3	8.4	
Cohabiting (n=57)	15.6	2.9	26.8	28.3	15.7	4.3	21.9	
Pregnancy (ever) (n=358)								<b>&lt;0.0001</b>
Yes (n=224)	62.0	9.7	19.2	22.1	11.4	7.9	29.8	
No (n=135)	38.1	1.2	15.5	54.6	10.7	4.2	13.7	
Childbirth (ever) (n=361)								<b>0.0002</b>
Yes (n=211)	57.5	8.8	16.8	23.3	12.1	7.5	31.5	
No (n=150)	42.5	3.2	20.6	49.2	9.6	5.1	12.3	

Results are from the subsample of eligible women that reported a contraceptive method preference (n=363). Less than 5% missing data across sociodemographic characteristics. Results are presented as weighted proportions (%). Numbers may not add to 100% because sampling weights were applied and we rounded to the nearest tenth. Comparisons of % across sociodemographic groups with Chi-square. Fifty-one respondents did not respond with their preferred contraceptive method, 8 respondents did not indicate their religious service attendance, 2 respondents did not designate a political affiliation, 4 respondents did not indicate their pregnancy history, and 1 respondent did not indicate their childbirth history. *p*-values <0.05 considered significant and indicated in bold.

\* Missing *p*-values are due to insufficient cell sizes in “Withdrawal/other” and “Permanent” categories across some variables. When the categories “Withdrawal/other” and “Permanent” were collapsed into one category, *p*-values were not significant for race/ethnicity, insurance, religious service attendance, and political party and were significant for the same above significant covariates: age, education, health service use, marital status, pregnancy history, and childbirth history.

TABLE 3. MULTINOMIAL REGRESSION MODEL OF FACTORS ASSOCIATED WITH WOMEN'S CONTRACEPTIVE METHOD PREFERENCE

	<i>Hormonal, non-LARC (effective)</i>	<i>None</i>		<i>Condoms/other (Less effective)</i>		<i>LARC/permanent (Highly effective)</i>	
		<i>Outcome reference group</i>	<i>aOR</i>	<i>95% CI</i>	<i>aOR</i>	<i>95% CI</i>	<i>aOR</i>
Age group							
18–24 years	REF	1	1	1	1	1	1
25–34 years		<b>15.3</b>	<b>1.1–213.4</b>	3.7	0.6–24.4	3.3	0.8–13.6
35–44 years		<b>32.2</b>	<b>1.9–549.6</b>	7.0	0.99–49.3	2.3	0.4–12.2
Educational attainment							
<High school	REF	1	1	1	1	1	1
High school		<b>17.0</b>	<b>2.5–117.5</b>	<b>18.0</b>	<b>1.8–176.0</b>	<b>23.3</b>	<b>1.1–493.0</b>
Some college		3.6	0.5–24.3	<b>9.0</b>	<b>1.0–79.3</b>	24.0	0.9–667.0
≥Bachelor's		2.7	0.3–21.3	7.4	0.6–89.1	14.3	0.4–496.2
Income							
<\$25,000	REF	1	1	1	1	1	1
\$25–49,999		1.6	0.4–7.3	2.5	0.3–19.2	2.0	0.5–8.5
\$50–74,999		1.4	0.3–7.2	1.5	0.2–10.6	1.2	0.2–8.2
≥\$75,000		0.9	0.2–4.5	0.9	0.2–4.7	1.6	0.3–7.8
Race/ethnicity							
White, non-Hisp	REF	1	1	1	1	1	1
Black, non-Hisp		2.9	0.5–19.0	<b>9.6</b>	<b>1.3–73.2</b>	1.2	0.2–9.3
Other, non-Hisp		0.7	0.07–6.6	<b>14</b>	<b>2.0–93.0</b>	1.3	0.2–9.3
Hispanic		1.2	0.2–5.5	<b>8.5</b>	<b>2.3–32.5</b>	4.0	0.8–19.5
Type of insurance							
Private	REF	1.0	0.2–4.8	0.7	0.1–3.3	1.1	0.2–5.5
Medicaid/care		0.4	0.1–2.6	0.1	0.01–1.4	0.8	0.1–4.2
Other		1.2	0.1–9.9	1.8	0.2–20.1	2.3	0.3–16.9
None/Don't know		1	1	1	1	1	1
Health service use past 5 years							
>Once per year	REF	0.3	0.04–1.4	0.3	0.04–1.8	2.0	0.2–24.6
About once per year		0.3	0.05–1.7	0.5	0.07–3.3	3.1	0.3–34.7
<Once per year		0.3	0.04–1.9	0.9	0.1–6.9	1.6	0.1–20.6
Never		1	1	1	1	1	1
Religious affiliation							
Yes	REF	1	1	1	1	1	1
No		1.1	0.2–5.0	0.5	0.1–2.8	2.2	0.6–9.1
Religious service attendance							
≥Weekly	REF	1.4	0.2–7.8	0.9	0.1–5.7	2.9	0.5–16.9
Once or twice a month		0.9	0.1–6.5	0.5	0.05–4.5	5.0	0.7–36.0
A few times a year or less		<b>5.8</b>	<b>1.4–23.7</b>	2.4	0.5–11.8	<b>7.9</b>	<b>1.9–33.6</b>
Never		1	1	1	1	1	1
Political party							
Democrat	REF	0.3	0.09–1.1	0.4	0.1–1.3	0.4	0.1–1.5
Republican		0.8	0.2–3.1	1.1	0.2–5.7	1.2	0.3–4.9
Independent/Other		0.5	0.1–2.1	0.3	0.05–1.9	0.6	0.1–2.6
None		1	1	1	1	1	1
Marital status							
Never married	REF	1	1	1	1	1	1
Married/previously married		1.8	0.3–11.0	0.7	0.1–4.5	0.3	0.07–1.4
Cohabiting		3.2	0.5–19.5	1.5	0.2–11.6	1.9	0.5–7.4
Pregnancy (ever)							
Yes	REF	1	1	1	1	1	1
No		0.3	0.1–1.1	0.5	0.1–1.6	<b>0.1</b>	<b>0.03–0.4</b>

Results are from the subsample of 351 women who provided all preferred contraceptive method and sociodemographic data. Results are presented as weighted adjusted odds ratios and 95% confidence intervals from full multinomial logistic regression models with type of method modeled as the outcome and hormonal (effective, non-LARC) methods as reference group.  
*p*-values <0.05 considered significant and bolded.

Contraceptive method effectiveness categories based upon our 5-point categorical variable shown in text and Tables 1–2 and further collapsed into Centers for Disease Control and Prevention's effectiveness categories, where "effective" includes non-LARC hormonal methods; "less effective" includes condoms and withdrawal/other; and "highly effective" includes permanent methods and long-acting reversible contraception (LARC), which include intrauterine devices and implants.

Ever childbirth not included in final models due to collinearity with ever pregnant, with similar point estimates.

aOR, adjusted odds ratio; CI, confidence interval; REF, reference.

TABLE 4. WOMEN'S PREFERRED CONTRACEPTIVE METHOD, BY METHOD USED

Contraceptive method used (%)	Preferred contraceptive method (%)					
	Permanent (6%, n=23)	LARC (19%, n=66)	Hormonal, non-LARC (35%, n=123)	Condoms (11%, n=39)	Withdrawal/ other (7%, n=23)	None (22%, n=77)
Permanent (7%, n=23)	<u>34.0</u>	8.2	6.0	0	0	51.8
LARC (12%, n=41)	1.2	<u>75.6</u>	10.5	0	10.5	2.2
Hormonal, non-LARC (37%, n=131)	6.2	<u>18.2</u>	<u>65.3</u>	5.7	2.7	2.0
Condoms (14%, n=50)	8.6	5.6	24.6	<u>49.6</u>	5.3	6.2
Withdrawal/other (6%, n=23)	6.3	0	31.0	<u>10.8</u>	<u>32.3</u>	19.6
None (24%, n=84)	0.8	8.0	15.2	4.9	<u>6.3</u>	<u>64.8</u>

Results are from the subsample of 351 women who provided all preferred contraceptive method and sociodemographic data. Results are presented as weighted percentages. *p*-value from Chi-square comparing method preferred by method used.

\* Missing *p*-value is due to insufficient cell sizes across permanent and withdrawal/other methods. When the categories "Withdrawal/other" and "Permanent" were collapsed into one category, the reported *p*-value was <0.0001.

Underlined values indicate match between method preferred and method used.

the greatest proportions of preference-use match (76%), followed by hormonal (non-LARC) (65%), no method (65%), condoms (50%), permanent (34%), and withdrawal/other (32%) (Table 4).

In multivariable models, contraceptive method use was highly predictive of method preference (not shown in tables). Compared to women using an "effective" (hormonal, non-LARC) method, "highly effective" (LARC, permanent) method users were more likely to prefer "highly effective" methods (aOR 84, 95% CI 8.7, 810, *p*=0.0001), while nonusers and "less effective" (condoms, withdrawal) method users were more likely to prefer no or "less effective" methods (aOR range 11–860).

Women's perceived reasons for contraceptive preference-use mismatch are presented in Table 5. Among the third of women who reported mismatch, cost/insurance (41%) and

lack of perceived/actual need (34%) were the most commonly reported reasons why women reported that they were not using their preferred method, followed by fear of side effects/health concerns (19%), access/provider-related barriers (13%), pregnancy ambivalence (9%), being in contemplation or intention phase within the contraceptive decision-making process (9%), perceived ineligibility (6%), and method-specific preference concerns (6%).

## Discussion

In our study of women's contraceptive method preference and method preference-use match, we found strong preference for "effective" and "highly effective" methods and high rates of concordance among LARC (86%), no method (65%), and hormonal (non-LARC) method (65%) users. Others have documented similar results for method satisfaction, with high satisfaction rates among LARC users and satisfaction predicting high continuation and low unintended pregnancy rates among the women who were using and preferring a method.<sup>4,5,8</sup> Notably, 36% of our women reported method preference-use mismatch and mismatch was highest among "less effective" method users (e.g., condoms, withdrawal), for women using a method. While choice, satisfaction, and continuation have been more widely studied dimensions of contraceptive decision-making and behavior, our findings build upon this work to highlight the unique contribution of method preference to this contraceptive continuum.<sup>11–14</sup>

Social disparities in contraceptive preference and method preference-use mismatch were noted, with minority women preferring less effective methods compared to White women. Some researchers have documented lower levels of method awareness among minority populations,<sup>18,19</sup> yet others have found LARC use higher in some groups (e.g., Hispanics) when cost and knowledge barriers are removed.<sup>20</sup> For instance, data from the 2011–2013 National Study on Family Growth (NSFG) show higher LARC use in Hispanic populations (15%) versus White (11%) and Black (9%) populations.<sup>21</sup> Nonetheless, our findings in this study regarding less effective method preference may be important in helping explain persistent disparities in unintended pregnancy rates among minority women.

TABLE 5. REASONS FOR MISMATCH BETWEEN WOMEN'S PREFERRED AND USED CONTRACEPTIVE METHODS

Reasons women cited for contraceptive method mismatch		
Reason	%	n
Cost/insurance	41	36
Lack of perceived/actual need	34	30
Fear of side effects and health concerns	19	17
Access/provider barriers	13	11
Pregnancy ambivalence	9	8
Still in contemplation/intention phase	9	8
Perceived ineligibility	6	5
Method-specific preference concerns	6	5
Convenience issues	3	2
Other	3	2
Mismatch among all women	36	87

Results are from the sub-sample of eligible women that reported a reason for preference-use mismatch (*n*=87).

Results are presented as weighted proportions (%) and frequencies. Numbers may not add to 100% because women could select multiple reasons.

Here, mismatch was determined by a single survey item explicitly asking women, "Are you currently using the type of birth control that you would MOST LIKE to use?"

In addition, some lower educated women in this study preferred less effective methods and contraceptive preference-use mismatch was particularly high among them, although not in an expected direction—less than 5% of women with less than high school education preferred LARC, while 16% were using it. These estimates were consistent with national estimates from the NSFG (12% of women with less than high school education report using LARC).<sup>21</sup>

Scholars have argued that socially disadvantaged women may experience reduced reproductive autonomy in contraceptive decision-making and provision,<sup>14,15,22</sup> and from a reproductive justice perspective, this finding deserves more attention. Young, poor, minority, and undereducated women were underrepresented in our study (which limits our generalizability), and yet these same groups experience the highest rates of unintended pregnancy.<sup>2</sup> Overall, a better understanding of socially disadvantaged women's preferred methods and access to them is urgently needed. Clinical and public health efforts should also consider sources of discrimination in family planning services. Interventions that explicitly account for women's contraception preferences and pregnancy desires in contraceptive education decision-making and provision are urgently needed.

Cost/insurance concerns were among the top reasons for contraceptive preference-use mismatch (41%), closely followed by other access and provider-related issues. Financial and health services barriers precluding utilization of highly effective methods have been widely documented.<sup>23–27</sup> With the Affordable Care Act, full insurance coverage of contraceptive methods in the United States has expanded, improving access to LARC and hormonal methods in recent months.<sup>28</sup>

Yet, fewer women in our sample reported no insurance (20%), and it is unclear in these data why cost/insurance concerns were so high. It is possible that women's insurance plans in 2013 had been “grandfathered” into the system with the healthcare law and were not yet required to cover all methods, or that, there were discrepancies between women's perceived and actual contraception coverage. Indeed, challenges to implementation of mandated contraceptive coverage have impacted both insured and underinsured women's ability to obtain their preferred methods.<sup>29,30</sup> Structural barriers appear to continue impeding women from comprehensive, preferred family planning care.

Method-specific concerns and behavioral intentions were also prominent reasons for contraceptive preference-use mismatch. Among women with method-specific concerns (*e.g.*, convenience, fear of side effects/health concerns, perceived ineligibility), the majority (70%) preferred more effective methods than the ones they were using. Indeed, associations between method knowledge/attitudes and satisfaction, choice, and use have been described.<sup>3,9,31</sup> However, the meaning and implications of interrelationships between effectiveness and preference are not clear, given that the CDC effectiveness categories may not reflect a woman's motivation to choose or use a particular contraceptive method for effectiveness alone. Unfortunately, we did not assess women's knowledge of different methods or experiences with counseling in this study, limiting our ability to explore the impact of knowledge or relationships of interest on preference.

On the other hand, a nontrivial proportion of women had active intentions to pursue their preferred methods, but had

not yet acquired them (*e.g.*, their reported reason for mismatch was “need to find a doctor to go to” and were thus coded to “Still in Contemplation/Intention Phase”), which is a promising finding consistent with behavioral change models.<sup>10,32</sup> Women in “precontemplation,” “contemplation,” or “preparation” stages may be particularly influenced by information from peers, partners, health providers, and others, and thus are prime targets for educational and social network interventions. Indeed, cognitive behavioral models that account for preferences (or some proxy of it) appear useful in intervention research on contraceptive method continuation. A study of postpartum U.S. adolescents indicated a disconnect between intention to continue Depo-Provera at 6 months (80%) postpartum and actual continuation at 12 months (43%), despite high satisfaction with the method.<sup>33</sup>

Collectively, contraceptive counseling that addresses method-specific understanding, misperceptions, and benefits and targets women's contraceptive method behavioral intentions may have the potential to facilitate informed contraceptive decision-making and uptake of preferred methods. At the least, clinicians should consider the complex context in which contraceptive decision-making occurs before a woman steps into the exam room.

Our study has several notable limitations. While our study response rate of 43% ( $n=1078$ ) was consistent with other Internet-based population health surveys, it was not ideal. Our sample was derived from a national probability panel and applied sampling weights, but women were more educated, more privately insured, of higher income status, more Caucasian, and older than the general population and were similarly different from nonrespondents. Our subsample sizes for some contraceptive outcomes were small and limited our ability to fully examine differences across individual methods and socio-demographic groups. In addition, our small subsample sizes likely contributed to relatively large effects of some factors associated with women's preference (*i.e.*, reflected in wide confidence intervals). Thus, the true magnitude of effects for these factors would benefit from further investigation. In particular, our findings do not yield firm conclusions about LARC preferences necessarily, given our relatively small sample of women using ( $n=42$ ) and preferring ( $n=67$ ) LARC.

We approximated contraception method choice with women's method at last sexual intercourse, which may differ from their usual method of contraception. Also, our measures for preference and reasons for preference-use mismatch may have not fully captured the complexity of women's experiences. While our preferences question item stem was originally worded in an attempt to best distinguish between methods women are currently using and what they actually prefer, women's “future” preferences may not entirely reflect current preference. Although we included an open-ended response option and attempted to provide a comprehensive list based upon the literature, our reasons for mismatch were likely not exhaustive and may have missed some important factors.<sup>34,35</sup>

In addition, while we were interested in sterilization as a method of interest, the meaning of preference among women already sterilized is not fully clear from these data—the prevalence rate for mismatch may reflect regret or that they simply perceived no need and thus have no preference. We adapted the standard parameters to define our “at risk” analytical sample, although it is possible that our inclusion



criteria had the potential to both erroneously exclude “at risk” women, and include women not “at risk” for unintended pregnancy. Furthermore, we did not assess women’s fertility intentions, which could potentially explain our high rate of preference for “no method.” Future research is needed to further examine preferences and presence-use mismatch for nonusers in a broader context of fertility intentions.

### Conclusion

Nonetheless, findings suggest that, while perfect match rates between women’s preferred and usual contraceptive methods are a lofty goal in current healthcare systems,<sup>17–18</sup> strategies that reduce cost and awareness barriers may improve women’s reproductive autonomy, participation in shared decision-making, and ultimately, their access to and use of desired and (highly) effective methods.<sup>19</sup> Even when financial/access/knowledge barriers are reduced, however, women’s personal goals for contraceptive methods and family planning may not align with population-level goals, which emphasize contraceptive effectiveness and reducing aggregate unintended pregnancy rates. Healthcare professionals must balance patient autonomy and shared decision-making in contraceptive care with the broader public health agenda.

Additional research is needed to understand women’s complex reasons for method preference, preference-use mismatch, and disparities across groups. In particular, it is vital for contraceptive counseling interventions to explicitly address women’s preferences for contraceptive methods, target groups at risk for mismatch (*i.e.*, minority women, users of less effective methods), and holistically consider the many potential reasons for mismatch within reproductive health service delivery models. Continued efforts to promote universal coverage of the full scope of methods and more robust patient-centered models of contraceptive care can ultimately help women achieve greater concordance between their family planning preferences, aspirations, and outcomes.

### Source of Work

Women’s Health Care Experiences and Preferences Survey, a population-based study administered in August 2013 using the GfK (formerly Knowledge Networks) nationally representative probability panel.

### Précis

While many women preferred effective and highly effective contraception, mismatch between preferred and usual methods was common.

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