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## The Role of Contraceptive Attributes in Women's Contraceptive Decision Making

Tessa Madden, MD, MPH<sup>a,\*</sup>, Gina M. Secura, PhD, MPH<sup>a</sup>, Robert Nease, PhD<sup>b</sup>, Mary Politi, PhD<sup>c</sup>, and Jeffrey F. Peipert, MD, PhD<sup>a</sup>

<sup>a</sup>Division of Clinical Research, Department of Obstetrics and Gynecology, Washington University in St. Louis School of Medicine, St. Louis, Missouri 63110

<sup>b</sup>Division of General Medical Sciences, Department of Internal Medicine, Washington University in St. Louis School of Medicine, St. Louis, Missouri 63110

<sup>c</sup>Division of Public Health Sciences, Department of Surgery, Washington University in St. Louis School of Medicine, St. Louis, Missouri 63110

### Abstract

**Objective**—Contraceptive methods have differing attributes. Women's preferences for these attributes may influence contraceptive decision making. Our objective was to identify women's contraceptive preferences among women initiating a new contraceptive method.

**Study Design**—We conducted a cross-sectional, self-administered survey of women's contraceptive preferences at the time of enrollment into the Contraceptive CHOICE Project. Participants were asked to rank the importance of 15 contraceptive attributes on a three-point scale (1="not at all important," 2="somewhat important," and "3=very important") and then to rank the 3 attributes that were the most important when choosing a contraceptive method. The survey also contained questions about prior contraceptive experience and barriers to contraceptive use. Information about demographic and reproductive characteristics was collected through the CHOICE Project baseline survey.

**Results**—There were 2,590 women who completed the survey. Our sample was racially and socioeconomically diverse. Method attributes with the highest importance score were effectiveness (mean score 2.97 [standard deviation 0.18]), safety (2.96 [0.22]), affordability (2.61 [0.61]), whether the method is long-lasting (2.58 [0.61]), and whether the method is "forgettable" (2.54 [0.66]). The attributes most likely to be ranked by respondents among the top three attributes included effectiveness (80.5%), safety (64.8%) and side effects of the method (42.7%).

\* **Corresponding author (reprints will not be available):** Tessa Madden, MD, MPH, Department of Obstetrics and Gynecology, Washington University in St. Louis School of Medicine, 4533 Clayton Avenue, Box 8219, St. Louis, Missouri 63110; Tele: 314-747-6495 (business), Fax: 314-747-4019, maddent@wustl.edu.

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**Conclusion**—Multiple contraceptive attributes influence decision making and no single attribute drives most women’s decisions. Tailoring communication and helping women make complex trade offs between attributes can better support their contraceptive decisions and may assist them in making value-consistent choices. This process could improve continuation and satisfaction.

### Keywords

contraceptive attributes; contraceptive decision making; intrauterine device; preference-sensitive decision; contraceptive implant

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## Introduction

Contraceptive use is wide-spread in the United States with 62% of reproductive-aged women currently using a contraceptive method.<sup>1</sup> Like many preference-sensitive healthcare decisions, contraceptive methods have both desirable and undesirable attributes which require the patient to make trade-offs between potential benefits and disadvantages of options. However, many women lack knowledge or support for contraceptive decision-making or have unrealistic expectations, unclear values, or social pressures that can complicate decisions.<sup>2</sup> For example, multiple prior studies have shown that effectiveness is an important attribute to women when choosing contraception.<sup>3-7</sup> Yet many women remain uninformed about highly-effective contraceptive methods such as intrauterine devices (IUDs) and implants and use remains low compared to oral contraceptive pills and condoms; methods that have lower rates of effectiveness.<sup>1, 8</sup> Contraceptive decision making is complex, and women who select methods inconsistent with their preferences may be less likely to adhere or continue the method. Effective contraceptive counseling should assist women in identifying important method attributes. This, in turn, can help women choose the contraceptive method most consistent with her preferences which may lead to improved continuation and satisfaction.

Given that contraceptive decision making is a highly personal process, our primary objective in this analysis was to evaluate the importance of specific contraceptive attributes among participants of the Contraceptive CHOICE Project who were choosing a new contraceptive method. We also explored associations between contraceptive preferences and women’s choice of method as well women’s past experiences with contraception.

## Materials & Methods

This study was a cross-sectional survey of a sub-set of women enrolling into the Contraceptive CHOICE Project which was a prospective cohort study of 9,256 women designed to promote the use of long-acting reversible contraception and remove financial and access barriers to contraception.<sup>9</sup> Participants were recruited through referral from word-of-mouth, community-based medical providers, and study flyers. Participants underwent comprehensive contraceptive counseling<sup>10</sup> and were provided with their reversible contraceptive method of choice at no-cost. We developed a self-administered written survey which asked about prior contraceptive experience, including prior contraceptive use, experience of side effects with a prior method, and barriers to using contraception. Women were eligible to participate in the CHOICE Project if they were

between 14 and 45 years of age, English or Spanish speaking, at risk of unintended pregnancy (i.e. no prior tubal sterilization or hysterectomy), currently sexual active or planning to become sexually active with a male partner in the next 6 months, and willing to start a new contraceptive method. There were no additional eligibility requirements for this study.

The survey was administered to all CHOICE participants who enrolled between January 2010 and March 2011. Approval was obtained from the Human Research Protection Office prior to administration of the survey. The survey included the following contraceptive method attributes potentially important to women when selecting a contraceptive method; effectiveness; safety; side effects; long-acting; “forgettable” (do not have to remember to take or use the method regularly); affordability; protects against sexually transmitted infections; having a monthly period; not having irregular bleeding; privacy; and opinion of health care provider, partner, family, friend, or religious community. We developed this list using qualitative data from patients, expert opinion, and a review of the current scientific literature. Participants were asked to score the importance of the attribute in making a decision about contraception on a 3-point scale; 1 = “not at all important”; 2 = “somewhat important”; and 3 = “very important.” Next, participants were asked to choose from the same list of attributes, the three attributes that would be *most important* to them when making a decision about contraception and to rank them from 1 to 3. Participants completed the survey prior to undergoing contraceptive counseling and enrollment into CHOICE. Demographic characteristics and contraceptive method chosen were extracted from the baseline CHOICE Project survey which was administered in-person to the participant at the time of enrollment into the parent study.

To describe demographic characteristics of the study participants, frequencies, percentages, means, and standard deviations were used for appropriate data type. We calculated mean importance scores for contraceptive attributes. We then identified the attributes most commonly ranked among three most important attributes. We used multinomial logistic regression to investigate associations between the top three ranked attributes and the contraceptive method chosen at the time of enrollment. We calculated odds ratios (OR) and 95% confidence intervals (CI). We tested for confounding by including demographic factors in the regression model. None of the demographic factors confounded the relationship between attributes and method selection. The OR was considered to be statistically significant if the 95% CI did not cross 1. Statistical analyses were performed using STATA 11 (StataCorp, College Station, TX).

## Results

There were 2,902 women who completed the survey; 312 women did not answer any questions about contraceptive preferences and were excluded from the analysis leaving 2,590 respondents. The demographic and reproductive characteristics of the respondents are shown in Table 1. Prior contraceptive use was prevalent with 99.6% of respondents reporting any prior contraceptive use. The most common methods that women had used in the past were oral contraceptive pills (80%) and condoms (53%). Eight percent of women reported ever using an IUD or an implant. Participants’ current contraceptive method use

and the method chosen at the time of enrollment into the CHOICE Project are also shown in Table 1.

Table 2 shows the mean importance score for each contraceptive attribute. Effectiveness and safety had the highest mean scores. Cost of the method, whether the method is long-lasting, whether the method is easily forgettable, health care providers' recommendation, avoiding irregular bleeding, whether the method protects against sexually transmitted infection, and side effects all had mean scores greater than 2 (on a 3-point scale). Women did not rate the influence of partner, family, friends, and religious community highly in their contraceptive decision making with mean scores of less than 1.5.

When asked to identify the top three most important attributes when choosing a contraceptive method, respondents most frequently ranked effectiveness (42%) and safety (37%) as their top most preference (Table 2). Other attributes that were frequently ranked among the top three included side effects, cost, not having to remember to take or use the method regularly, that the method was long lasting, and that the method protected against sexually transmitted infections (STIs).

For our multinomial regression model, we evaluated a number of potential confounders we believed could be associated with the top-ranked attributes and the contraceptive method chosen, including age, race, education level, parity, markers of socioeconomic status, and history of unintended pregnancy. None of these variables made a significant (more than 10%) change in the effect estimate. Therefore, we present unadjusted odds ratios shown in Table 3. We found that ranking certain contraceptive attributes among the top three attributes was associated with contraceptive method choice. Women who ranked either the "method is long lasting" or "forgettable" were more likely to choose the IUD, the implant, DMPA, the contraceptive ring, or the contraceptive patch compared to women who chose OCPs." Women who ranked "wanting to have a regular period every month" and "avoiding irregular bleeding" were less likely to choose the IUD or the implant than OCPs. Ranking effectiveness as a top factor was associated with increased choice of the LNG-IUS only although the effect size was modest (OR 1.54; 95%CI 1.04–2.28). Concerns about safety were not associated with the choice of any specific contraceptive method.

Respondents commonly reported having experienced side effects with contraception; 69% reporting at least one side effect. Among women with at least one side effect, 65% reported that the side effect was severe enough to make them stop using their method. Table 4 shows the prevalence of experienced side effects. Contraceptive failure was common with 35% of women reporting a pregnancy that occurred while using contraception and 44% attributed at least one unplanned pregnancy to difficulties either obtaining or using contraception.

The majority of women (75%) reported at least one barrier to using contraception; 34% reported one barrier, 24% reported two barriers, and 18% reported three or more barriers. Cost was the most commonly reported barrier with 52% reporting that contraception was too expensive. Other barriers included not having the contraceptive method at the time of sexual activity (29%), difficulty obtaining contraception (23%), using a contraceptive method that

did not work (15%), and difficulty using a contraceptive method (14%). Five percent of respondents said that their partners disapproved of contraception.

## Comment

In this study, we found that there are multiple contraceptive preferences important to women when choosing a contraceptive method. The most important attributes were effectiveness and safety of the contraceptive methods. Other characteristics that were important included the side effects of the method, the cost of the method, and whether the method was long-acting or forgettable. These attributes had the highest importance scores. However, all of the attributes were ranked among the top three factors by at least a few women. Our finding that multiple characteristics influence contraceptive decision making is consistent with other studies.<sup>3, 5</sup> Choosing a contraceptive method is a highly individual decision requiring counseling and/or supplemental decision support to help women clarify their preferences for options and learn about which available options match their preferences.

Lack of knowledge is a potential barrier that interferes with a woman's ability to choose a method that matches her preferences. For example, we found that women who said avoiding irregular bleeding or having a regular period were less likely to select the copper IUD where the common bleeding pattern with this method is a regular monthly cycle without irregular bleeding. Therefore, patients may need additional education about the differences between the two types of IUDs. Also, we only observed an association between participants who ranked effectiveness among the top three factors and choice of the LNG-IUS suggesting that patients may not be aware that the copper IUD and the implant are also among the most effective methods of contraception.

It is also essential that counseling include a discussion of side effects associated with the contraceptive method. Over 40% of women ranked side effects among their three most important factors. Given that the majority of our respondents had experienced at least one side effect with a contraceptive method in the past, and 60% of these had discontinued a method because of the side effect, side effects clearly play an important role in satisfaction and continuation. Therefore, anticipatory counseling about method side effects can help increase the likelihood that the characteristics of the method and the woman's preferences are aligned.

Our study has several strengths. We had a large sample of socioeconomically diverse women. Women were enrolling into a contraceptive study and receiving their reversible method of choice at no out-of-pocket cost. Therefore, we were able to identify the preferred method in the absence of cost or access barriers. One potential limitation to this study is that the respondents were all participants of the CHOICE Project, and therefore may not be representative of other populations of women seeking contraception. In addition, uptake of IUDs and implants in the CHOICE Project was much higher than national estimates, 75% compared to 8.5%.<sup>11, 12</sup> It is possible that the contraceptive preferences of women enrolling in the CHOICE Project are different from women in general; however, we believe that this difference is the result of removal of barriers which influence women's contraceptive choices in the real world. Another potential limitation is that we developed a comprehensive

list of contraceptive attributes that may influence contraceptive selection. However, as participants did not have the option of writing in contraceptive characteristics not included in the list, we may have failed to identify additional attributes which influence women's contraceptive decisions. Our study population was limited to a single geographical region, and our results may not be generalizable to other populations.

Because multiple contraceptive attributes are important to women when choosing a method, tailored counseling is essential because this is not a "one-size fits all decision." Identifying the most important preferences can assist health care providers in personalizing the counseling to the individual women. Although there is little evidence to support effective interventions that improve contraceptive continuation or adherence,<sup>13</sup> some studies have shown that personalized contraceptive counseling can improve continuation and satisfaction.<sup>14, 15</sup> A randomized trial of a computerized, patient education module found that participants who used the education module and received tailored materials were more likely to still be using their chosen contraceptive method and adhere to the method at 4 months (95% compared to 77%).<sup>15</sup>

The results of our study have important implications for contraceptive counseling. Helping a woman identify which factors are important may assist her in making a decision consistent with her preferences. It also helps prepare her to have a discussion about contraceptive methods with her healthcare provider. Once a health care provider understands which attributes are the most important to women, they will be able to present contraceptive methods in an appropriate order which has potential to make counseling more time-efficient. Identification of women's contraceptive preferences is one part of improving contraceptive provision. It is also essential that women have access to all contraceptive methods including highly effective contraception such as IUDs and implants.

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**Table 1**

Baseline Demographic and Reproductive Characteristics of Survey Respondents (n=2,590).

Age (mean, SD)	25.6 (5.9)	
	N	%
<b>Race (missing = 6)</b>		
Black	1349	52.1
White	1044	40.3
Other	191	7.4
<b>Hispanic ethnicity (missing, n = 1)</b>	135	5.2
<b>Education</b>		
High school	801	30.9
Some college	1122	43.3
College+	667	25.8
<b>Insurance (missing, n=6)</b>		
None	1011	39.0
Commercial	1068	41.2
Public	505	19.5
<b>Marital status (missing, n=1)</b>		
Single	1495	57.7
Married/living with a partner	909	35.1
Separated/divorced/widowed	185	7.1
<b>Low SES<sup>a</sup></b>	1596	61.6
<b>Any prior pregnancy</b>	1786	69.0
<b>Prior unintended pregnancy</b>	1546	56.7
	Contraceptive method use at time of enrollment <sup>b</sup>	Contraceptive method chosen at enrollment <sup>b</sup>
None	784 (30.3)	0
LNG-IUS	32 (1.2)	1215 (46.9)
Copper IUD	7 (0.3)	378 (14.6)
Implant	27 (1.0)	505 (19.5)
DMPA	135 (5.2)	194 (7.49)
OCP	458 (17.7)	173 (6.7)
Ring	109 (4.2)	97 (3.8)
Patch	18 (0.7)	28 (1.1)
Condoms	890 (34.4)	0
Other barrier	6 (0.2)	0
Withdrawal	68 (2.6)	0
Natural family planning	3 (0.12)	0
Abstinence	53 (2.0)	0



<sup>a</sup>Low SES defined as receipt of public assistance or reported difficulty paying for transportation, housing, medical expenses or food in past 12 months

<sup>b</sup>Reported contraceptive method use at the time of enrollment into the Contraceptive CHOICE Project. If respondents reported using more than one method, the most effective method is listed.

SES – socioeconomic status; LNG-IUS – levonorgestrel intrauterine system; IUD – intrauterine device; OCP – oral contraceptive pills; DMPA – depot medroxyprogesterone acetate

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**Table 2**

Mean importance score for contraceptive attributes and frequencies of attributes being ranked as the top most important factor and among the top three most important factors in contraceptive decision making.

	Mean importance score (SD) (n=2,590)	Most important attribute N (%) (n=2476) <sup>a</sup>	Ranked among the top 3 most important attributes N (%) (n=2476)*
Effectiveness	2.97 (0.18)	1093 (44.1)	2084 (84.2)
Safety	2.96 (0.22)	944 (38.1)	1679 (67.8)
Affordability	2.61 (0.61)	77 (3.1)	649 (26.2)
The method is long lasting	2.58 (0.61)	38 (1.5)	421 (17.0)
Forgettable	2.54 (0.66)	75 (3.0)	461 (18.6)
Health care provider's recommendation	2.37 (0.67)	21 (0.8)	147 (5.9)
Not having irregular or unpredictable bleeding	2.32 (0.68)	21 (0.8)	231 (9.3)
Whether it protects against sexually transmitted infections	2.20 (0.83)	46 (1.9)	300 (12.1)
Side effects	2.20 (0.83)	128 (5.2)	1105 (44.6)
Having a regular period every month	1.99 (0.78)	23 (0.9)	217 (8.8)
Partner's opinion	1.56 (0.71)	5 (0.2)	59 (2.4)
Nobody knows that you are using the birth control method	1.38 (0.66)	1 (0.0)	30 (1.2)
Family's opinion	1.33 (0.60)	2 (0.1)	16 (0.6)
Religious community's opinion	1.22 (0.52)	1 (0.0)	15 (0.6)
Friend's opinion	1.21 (0.49)	0 (0.0)	10 (0.4)

<sup>a</sup>Data missing for 114 participants who did not complete this question.

Table 3

Unadjusted multinomial logistic regression of association between contraceptive attribute included in the top three ranked and contraceptive method chosen at the time of enrollment into the Contraceptive CHOICE Project (referent group: oral contraceptive pills).

	LNG-IUS	Copper IUD	Implant	DMPA	Ring	Patch
Effectiveness	<b>1.54 (1.04–2.28)</b>	1.34 (0.85–2.10)	1.40 (0.91–2.16)	1.09 (0.64–1.86)	1.39 (0.72–2.67)	0.51 (0.21–1.23)
Safety	0.85 (0.61–1.18)	0.86 (0.59–1.26)	1.13 (0.78–1.64)	1.12 (0.71–1.78)	1.02 (0.60–1.74)	0.88 (0.37–2.09)
Side effects	<b>0.63 (0.46–0.86)</b>	0.84 (0.59–1.20)	<b>0.51 (0.36–0.72)</b>	0.68 (0.45–1.04)	0.82 (0.50–1.35)	0.66 (0.29–1.48)
The method is long lasting	<b>3.88 (2.02–7.47)</b>	<b>4.40 (2.21–8.75)</b>	<b>4.43 (2.26–8.71)</b>	<b>3.34 (1.56–7.16)</b>	0.19 (0.02–1.47)	<b>4.00 (1.25–12.78)</b>
Forgettable	<b>8.69 (3.80–19.82)</b>	<b>6.86 (2.88–15.92)</b>	<b>6.60 (2.83–15.38)</b>	<b>4.92 (1.95–12.43)</b>	<b>4.29 (1.56–11.81)</b>	<b>6.82 (1.92–24.20)</b>
Whether it protects against sexually transmitted infections	0.67 (0.43–1.06)	<b>0.55 (0.32–0.96)</b>	1.22 (0.76–1.90)	1.27 (0.72–2.26)	0.61 (0.27–1.35)	0.47 (0.11–2.10)
Not having irregular or unpredictable bleeding	0.69 (0.43–1.10)	<b>0.46 (0.25–0.83)</b>	<b>0.56 (0.32–0.95)</b>	0.90 (0.48–1.69)	0.75 (0.34–1.63)	0.25 (0.03–1.91)
Having a regular period every month	<b>0.35 (0.22–0.54)</b>	<b>0.52 (0.31–0.86)</b>	<b>0.40 (0.24–0.66)</b>	<b>0.24 (0.11–0.53)</b>	0.86 (0.44–1.67)	1.32 (0.50–3.54)

All values are odds ratios and 95% confidence intervals. Statistically significant values are bolded.

LNG-IUS – levonorgestrel intrauterine system; IUD – intrauterine device; DMPA – depot medroxyprogesterone acetate;

**Table 4**

Prevalence of contraceptive side effects among the 1,796 (69%) respondents who reported at least one side effect.

	<b>Any side effect (n=1796)</b>	<b>Side effect severe enough to stop using the method (n= 1179)</b>
Allergic reaction	59 (3.3)	50 (4.2)
Weight gain	989 (55.1)	482 (40.9)
Nausea	406 (22.6)	230 (19.5)
Irregular bleeding	673 (37.5)	302 (25.6)
Pain	155 (8.6)	113 (9.6)
Change in sexual pleasure	285 (15.9)	83 (7.0)
Acne	205 (11.4)	75 (6.4)
Change in sex drive	363 (20.2)	117 (9.9)
Mood changes	689 (38.4)	316 (26.8)
Hair loss	164 (9.1)	89 (7.6)
Cramping	310 (17.3)	111 (9.4)
Skin irritation	119 (6.6)	59 (5.0)
Other	204 (11.4)	154 (13.1)

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