Contraceptive Features Preferred by Women At High Risk of Unintended Pregnancy

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CONTEXT: *Available contraceptives are not meeting many women's needs, as is evident by high levels of typical-use failure, method switching and discontinuation. To improve women's satisfaction with contraceptive methods, determining what features they prefer and how these preferences are satisfied by available methods and methods under development is crucial.*

METHODS: *The importance of 18 contraceptive method features was rated by 574 women seeking abortions—a group at high risk of having unprotected intercourse and unintended pregnancies—at six clinics across the United States in 2010. For each available and potential method, the number of features present was assessed, and the percentage of these that were "extremely important" to women was calculated.*

RESULTS: *The three contraceptive features deemed extremely important by the largest proportions of women were effectiveness (84%), lack of side effects (78%) and affordability (76%). For 91% of women, no method had all of the features they thought were extremely important. The ring and the sponge had the highest percentage of features that women deemed extremely important (67% each). Some streamlined modes of access and new contraceptive technologies have the potential to satisfy women's preferences. For example, an over-the-counter pill would have 71% of extremely important features, and an over-the-counter pericoital pill, 68%; currently available prescription pills have 60%.*

CONCLUSION: *The contraceptive features women want are largely absent from currently available methods. Developing and promoting methods that are more aligned with women's preferences presumably could help increase satisfaction and thereby encourage consistent and effective use.*

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Currently available contraceptive methods are not meeting many women's needs. As many as four in 10 women are not satisfied with their current method, reporting difficulty of use, problems with side effects, worry about effectiveness and reduced sexual pleasure.[1] The large gap between typical- and perfect-use failure rates indicates widespread inconsistent use of the most common contraceptive methods. Only three pill users per 1,000 would become pregnant in a year if using the method perfectly, but in the United States, 90 in 1,000 actually become pregnant; for male condoms, the pregnancy rate is 20 in 1,000 when use is consistent and correct, but more than 180 in 1,000 with typical use.[2] Unintended pregnancy rates are also driven by women who forgo contraceptives entirely. One in 12 U.S. women seeking to avoid pregnancy do not use any method of contraception, and another one in six have gaps in use.[3] Frequent contraceptive discontinuation contributes to the high rates of unintended pregnancy and abortion in the United States.[4,5]

Low levels of effective contraceptive use and high levels of dissatisfaction may be due to barriers to contraceptive availability or to a mismatch between women's preferences and the features of available methods. Research on inconsistent contraceptive use has cited barriers to access and dissatisfaction with method characteristics as primary reasons that women experience gaps in coverage.[1] All highly effective methods require a prescription from a physician or nurse practitioner. The cost of initiating use of a prescription method, the cost of resupply visits and the need for return visits to a clinic or pharmacy may deter women from effective, ongoing contraceptive use.[6–10] Changes in prescription requirements can improve contraceptive access. The over-the-counter availability of emergency contraception for women aged 17 and older[11] has reenergized the call to make regular oral contraceptives available without a prescription. Progestin-only oral contraceptives, which contain the same class of hormone found in emergency contraception, are thought to be a better prospect for a shift to over-the-counter status than combined pills, because they have fewer contraindications.[12]

Recent advances in contraceptive technology have increased women's options and have the potential to improve how well contraceptive features match women's preferences. Since 2001, women in the United States have seen the introduction of new modes of delivery of hormonal contraceptives—a patch,[13] a vaginal ring,[14] a single-rod subdermal implant[15] and a levonogestrel-releasing IUD.[16] Advances have also been made in the

availability of nonhormonal methods—an improved female condom[17] and one-size-fits-most diaphragms.[18] In addition, efforts are under way to make existing contraceptives easier to use; methods under development include self-administered injectables,[19] a vaginal ring that can be used for up to a year[11] and a pill that needs to be taken only when a woman has sex.[20]

A few studies have examined what contraceptive method features are most and least appealing to potential users. Sable and colleagues looked at 54 attitudes about birth control among women in Missouri seeking pregnancy tests,[21] while Unger and Molina examined attitudes that can act as barriers to contraceptive use among Latinas in Los Angeles.[22] These two studies, which focused on women's negative experiences in initiating or sustaining use,* are important for understanding women's history of contraceptive use, but they do not indicate what features women would look for in future methods. Grady and colleagues assessed the importance to both women and men aged 20–27 of seven contraceptive features: The method is effective, protects one's partner from STDs, protects oneself from STDs, is safe, is easy to use, does not interfere with sexual pleasure and does not require planning.[23] They found that women and men ranked these in the same order of importance (as listed), except that women valued no planning over lack of interference with sexual pleasure. The study, which was based on two national surveys, did not ask about other features of birth control or draw conclusions about what methods might be best aligned with most users' preferences.

We report here women's preferences for the features of contraceptive methods and how these preferences are satisfied by current methods and possible future ones. We focus on a population at particularly high risk for unintended pregnancy—women seeking abortion services. Such women are fecund, the vast majority do not want to become pregnant soon, and they are likely to have unprotected sex in the future or to use contraceptives inconsistently.[24,25]

METHODS

Sample and Data

Between April and September 2010, women seeking abortions were asked to complete self-administered interviews on laptops in the waiting rooms of six large abortion clinics in or near St. Louis; Chicago; Little Rock, Arkansas; Seattle; Philadelphia; and Oakland. The interview methods have been described elsewhere.[26,27] Clinic staff identified eligible women: those who spoke English or Spanish and were seeking an abortion. They gave each eligible woman a flyer about the study and directed her to a research assistant, who launched the computer-guided survey if she verbally consented to participate. The survey asked women about their contraceptive preferences, contraceptive use, attitudes about unprotected intercourse, sexual behavior, contraindications for use of various contraceptive methods, unintended pregnancy recognition and demographic characteristics. Women received $20 for completing the survey. No identifying information was collected, but a unique study identification number was assigned to each respondent. The study was approved by the University of California, San Francisco, Committee on Human Research.

Key Measures

Participants were asked, "In the next three months, how likely is it that you will have sex without using any method of birth control?" The answer choices were "extremely likely," "somewhat likely" and "not at all likely." We categorized women as being willing to engage in unprotected intercourse if they answered either "extremely likely" or "somewhat likely."

Participants also were asked to rate the importance of 18 features of contraceptive methods in five areas: control and privacy; side effects and health concerns; using the method; stopping use of the method; and access. These features were chosen on the basis of the authors' clinical experience and a review of the literature on women's contraceptive preferences.[22,23,28] Women were asked whether each feature was "extremely," "somewhat" or "not at all" important. Some women marked an answer only when they thought the feature was somewhat or extremely important, and did not explicitly choose "not at all important." We assumed that if a woman chose some features as being somewhat or extremely important and were missing responses to others, she did not consider the missing features important.

Analysis

To examine how women's preferences match the features of contraceptive methods, we first assessed which features each method possesses (Table 1, page 196). We then counted the method features that each participant indicated were extremely important and calculated what proportion of her extremely important features each method possesses; we labeled this measure the percentage match. (For example, if a woman identified 10 features as extremely important, and oral contraceptives possess three of them, the percentage match for oral contraceptives for this woman is 30%.) We then averaged, across all women, the percentage matches for all contraceptive methods. We estimated the percentage match both for currently available methods and for methods that may become available in the future.

Some features are inherent to a particular method, while the presence of other features may vary depending on personal or situational factors. For example, IUDs do not require user action at every episode of intercourse, but

*Sable et al. included such items as "It is hard to take pills at the same time every day," "The trouble with condoms is that you have to trust the man to use them" and "I worry about the side effects of birth control."[21] Items for the study by Unger and Molina included "Sex is more romantic when we don't use birth control" and "My partner doesn't want to use birth control."[22]

TABLE 1. Contraceptive features whose importance was examined among women seeking abortions at selected clinics in six U.S. cities, 2010, and methods that possess each feature

Feature	Male condoms	Female condoms	Pill	OTC pill	Ring	Patch	Injectable	Implant	IUD	Self-removable IUD	Sponge	Diaphragm	OTC diaphragm
I can stop using the birth control method at any time	X	X	X	X	X	X				X	X	X	X
I can get pregnant immediately after I stop using it	X	X	X	X	X	X			X	X	X	X	X
The method is easy to use					X	X	X	X	X	X			
I don't have to remember to use the method each time I have sex			X	X	X	X	X	X	X	X			
I use the method only when I am going to have sex	X	X									X	X	X
The method is easy for me to get	X	X		X							X		X
I can get it without seeing a doctor or going to a clinic	X	X		X							X		X
The method has few or no side effects	X	X									X	X	X
The method doesn't detract from my sexual enjoyment			X	X	X	X	X	X	X	X	X	X	X
The method does not detract from my partner's sexual enjoyment			X	X	X	X	X	X	X	X	X	X	X
The method has a health benefit			X	X	X	X	X	X	X	X			
The method protects against STDs	X	X											
The method does not change my menstrual periods	X	X									X	X	X
The method is very effective at preventing pregnancy			X	X	X	X	X	X	X	X			
I am responsible for using the method and not my sexual partner		X	X	X	X	X	X	X	X	X	X	X	X
I have control over when and whether to use the method		X	X	X	X	X					X	X	X
No one can tell that I am using the method			X	X	X		X	X	X	X	X	X	X

Notes: The features examined also included affordability, but it was not assessed here because we cannot know what the price of a method would be for a particular woman. OTC=over-the-counter. FP=family planning. EC=emergency contraception.

ease of access may depend on women's access to clinical care and health insurance. Given data limitations, we made a number of assumptions about how to interpret our findings. We assumed that "the method is easy for me to get" is equivalent to nonprescription status, because we lacked data about insurance and access to services. We also assumed that all hormonal methods have both side effects and health benefits. However, because women's physiological responses to hormonal contraceptives vary and because side effects emerged as an important feature, we assessed the sensitivity of our findings to this assumption. We interpreted the feature "easy to use" as meaning that the method does not need to be used every day or for every sexual act. We assumed "the method protects against STDs" means protection against both bacterial and viral STDs. We considered methods to be very effective if the perfect-use failure rate is less than 1% and the typical-use failure rate is less than 10%. We interpreted the item "no one can tell that I am using the method" to mean that a sexual partner cannot tell that a method is being used. For the feature "I have control over when and whether to use the method," we assumed that control of the method is in the hands of the woman, rather than her partner. We omitted the characteristic "method is affordable" from our calculations of percentage matches, because we cannot know what the price of a method would be for a particular woman.

In additional analyses, we tested the mean number of extremely important features by women's willingness to have unprotected intercourse in the next three months ("somewhat" or "very likely" vs. "not at all likely"), by race (black vs. white), and by age (younger than 20 vs. 20 and older), using a t test. We also evaluated differences in preferences for specific features of contraceptive methods by willingness to have unprotected sex, race and age, using chi-square tests.

RESULTS

Sixty-one percent of the 983 eligible women who presented at the clinics agreed to participate in the survey. Of these, 574 (95%) responded to questions about preferred contraceptive features and made up our analytic sample. Most of those who skipped these questions did so because they stopped the survey prematurely.

Fifty-four percent of respondents were in their 20s, 17% were younger than 20, and 22% were 30 or older; 7% were missing data (Table 2). Forty-five percent of the women were black, 25% were white, 11% were Hispanic and 19% gave another response or did not answer the question. Three-quarters of women were seeking a first-trimester abortion. Seventy-six percent had had intercourse at least weekly in the three months prior to conception, and 89% had not consistently used a method. About one-quarter of respondents reported that they had never used a contraceptive method in the three months prior to conception. On the basis of the responses to the questions on frequency of intercourse and contraceptive use, we estimate that three-quarters of the respondents had had unprotected intercourse three or more times in the three months leading to conception (not shown). Many women expected to have unprotected intercourse in the next three months: Six percent said it was extremely likely, and 16% said it was somewhat likely. However, 87% reported that they planned to use contraceptives after the abortion (not shown).

The three features that were extremely important for the largest proportions of women were effectiveness (84%), lack of side effects (78%) and affordability (76%—Table 3, page 198). More than two-thirds of respondents chose the four next most commonly preferred features: The method is easy to get (74%) and to use (74%), and the woman has control over its use (70%) and responsibility for its use (69%).

On average, women identified 10.6 of the 18 characteristics as being "extremely important." Women who

TABLE 1 continued

With-drawal	Natural FP	EC	Male sterilization	Female sterilization	Peri-coital pill	OTC peri-coital pill	None
X	X	X			X	X	X
X	X	X			X	X	X
		X	X	X			X
			X	X			X
X	X	X			X	X	
X	X	X				X	X
X	X	X				X	X
X	X		X	X			X
		X	X	X	X	X	X
		X	X	X	X	X	X
					X	X	
X	X		X	X			X
			X	X	X	X	
		X		X	X	X	X
		X			X	X	
		X	X	X	X	X	X

TABLE 2. Percentage distribution of study participants, by selected characteristics

Characteristic	% (N=574)
Age	
14–19	17
20–24	32
25–29	22
30–49	22
Missing	7
Race/ethnicity	
Black	45
White	25
Hispanic	11
Asian/Pacific Islander	6
American Indian	4
Missing/other	9
Trimester	
First	76
Second	19
Third	5
Frequency of intercourse in the three months prior to conception	
Every day	13
3 times/week	41
1 time/week	22
2 times/month	15
1 time/month	2
Once or twice	5
Never	3
% of acts in which a contraceptive was used in the three months prior to conception	
0	29
10–40	19
50	17
60–90	23
100	11
Likelihood of unprotected sex in the next three months	
Extremely likely	6
Somewhat likely	16
Not at all likely	75
Prefer not to answer	3
Total	100

Note: Percentages may not total 100 because of rounding.

said they were likely to have unprotected intercourse in the next three months identified 9.7 features as extremely important, whereas those who were not likely to have unprotected sex identified 10.8 (Table 4, page 198). Women who anticipated having unprotected sex were significantly less likely than others to consider seven features (effectiveness, lack of side effects, affordability, accessibility, ease of use, not used at time of sex and no reduction in partners' enjoyment) extremely important. Black women had a different profile of contraceptive preferences than white women. They identified an average of 11.0 features as extremely important, whereas white women identified 9.7. Black women were less likely than white women to say that effectiveness or sexual enjoyment is important, but they were more likely to care about features relating to control, health effects, timing relative to intercourse and protection against STDs. Teenagers reported an average of 9.7 extremely important features and were less likely than adults to report that affordability, accessibility and their partner's sexual enjoyment are important.

For 91% of women, no contraceptive method has all the features they think are extremely important. The dearth of perfect matches is due largely to conflicts between preferences. For example, 73% of women want a method that is very effective and has few or no side effects; according to our assessments (Table 1), that combination does not exist, although an individual woman may find an effective method that does not have significant side effects for her. Some of the failure to match with a contraceptive method is due to possible inconsistencies in women's preferences; 29% of women want a method that is used only when intercourse is anticipated and that does not have to be remembered with each act, a combination that is difficult to achieve.

The average percentage match for currently available methods ranged from 67%, for the ring and sponge, to 37%, for withdrawal and natural family planning (Table 5, page 199). For oral contraceptives, the most common reversible method of contraception,[29] it was 60%; for male condoms, 42%.

Some new methods in development and new modes of delivery for existing methods have the potential to satisfy a substantial proportion of women's preferences. If oral contraceptives were available without a prescription, they would have 71% of extremely important features. A pericoital pill would have 64% of women's desired features, or 68% if it were available without a prescription. A self-removable IUD would have 61% of women's desired features, while a diaphragm that could be purchased over the counter at a drugstore would have 60% of women's extremely important features.

Few women will be able to find contraceptive methods that have all the features that are extremely important to them. No method is a perfect match for more than 4%

TABLE 3. Percentage distribution of women, by opinions of importance of selected contraceptive features

Feature	Extremely important	Somewhat important	Not at all important	No answer	Total
Very effective	84	9	2	5	100
Few/no side effects	78	16	3	2	100
Affordable	76	14	5	6	100
Easy to get	74	17	4	5	100
Easy to use	74	18	3	6	100
Woman controls when and whether to use	70	19	6	4	100
Woman, and not her partner, is responsible for use	69	21	6	4	100
Not used at time of sex	65	19	8	7	100
Does not reduce woman's sexual enjoyment	64	21	9	5	100
Does not reduce partner's sexual enjoyment	61	22	11	6	100
Protects against STDs	61	20	13	6	100
Use is undetectable	57	18	19	6	100
Has a health benefit	56	25	13	7	100
Does not change menstrual period	51	27	17	6	100
Can be stopped at any time	50	29	12	9	100
Pregnancy possible immediately after use ends	50	22	17	11	100
No doctor/clinic visit needed	42	24	25	9	100
Used only at time of sex	35	18	35	12	100

Note: Percentages may not total 100 because of rounding.

of women (the proportion for emergency contraception and an over-the-counter oral contraceptive); most contain all the important features for about 1–2%. However, good matches—methods that have three-quarters or more of a woman's extremely important features—are more common. The ring is a good match for nearly one-third of women; the sponge and emergency contraception, for about one-quarter. An over-the-counter oral contraceptive would be a good match for the most women (41%); about one-quarter of women would have a good match with an over-the-counter pericoital pill.

The estimated percentage match did not predict which method a woman intended to use after her abortion or how consistently she intended to use it. Women intending to use condoms, oral contraceptives, the ring and the injectable did not have significantly higher percentage matches for those methods than women who were not planning to use them. However, women choosing an IUD had a slightly higher match for the IUD than women who did not choose one (59% vs. 55%; p<.05). Also, low percentage match with specific intended future contraceptive methods was not associated with women's reported willingness to have unprotected intercourse in the near future.

Our results are sensitive to our assumption that women experience side effects from hormonal methods of contraception. When we included "the method has few or no side effects" as a feature of hormonal methods, the percentage of extremely important features matched by each hormonal method increased by 8.4 percentage points. This change elevated the patch and oral contraceptives above the sponge and emergency contraception in the ranking of greatest percentage match.

DISCUSSION

Asking women about the features they would like to see in a contraceptive method may give us a better understanding of their preferences than asking their opinions of existing methods or about their experiences with contraception. Opinions about specific methods may be limited by contraceptive knowledge and misconceptions, while discussion of past method use may reveal dissatisfaction, but not factors associated with current intentions.

Not surprisingly, contraceptive effectiveness and a lack of side effects were the most commonly preferred fea-

TABLE 4. Mean number of contraceptive features that are extremely important to women, and percentage of women who consider each feature extremely important, by selected characteristics of women

Feature	Likely to have unprotected sex		Race		Age	
	No	Yes	White	Black	≥20	<20
Means						
No. of features that are extremely important	10.8	9.7*	9.7	11.0*	10.6	9.7
Percentages						
Very effective	89	71*	90	82*	85	80
Few/no side effects	81	70*	76	81	79	77
Affordable	82	61*	81	77	78	63*
Easy to get	80	63*	74	78	77	62*
Easy to use	78	63*	72	75	75	66
Woman controls when and whether to use	73	68	65	74*	71	65
Woman, and not her partner, is responsible for use	71	66	64	76*	70	63
Not used at time of sex	68	56*	60	73*	67	58
Does not reduce woman's sexual enjoyment	67	58	72	60*	65	56
Does not reduce partner's sexual enjoyment	64	54*	70	57*	63	49*
Protects against STDs	63	57	45	68*	60	65
Use is undetectable	56	63	57	58	56	62
Has a health benefit	59	51	50	62*	57	54
Does not change menstrual periods	52	52	40	55*	52	44
Can be stopped at any time	53	44	40	56*	51	43
Pregnancy possible immediately after use ends	51	48	39	55*	50	47
No doctor/clinic visit needed	43	45	37	45	43	36
Used only at time of sex	35	39	18	45*	35	37

*p<.05 in t test (for means) or chi-square test (for percentages).

TABLE 5. Percentage of extremely important features possessed by current and potential new methods of contraception, and percentage of women for whom each method is a perfect match or a good match

Contraceptive method	% of extremely important features	% of women	
		Perfect match	Good match
Currently available methods			
Ring	67	3	31
Sponge	67	3	24
Emergency contraception	66	4	23
Patch	62	3	19
Pill	60	2	15
Female condom	56	3	15
IUD	56	1	14
Diaphragm	56	2	11
Female sterilization	55	1	12
Male sterilization	52	2	14
Injectable	51	1	11
Implant	51	1	11
Male condom	42	1	9
Withdrawal/natural family planning	37	1	8
Potential new methods			
Over-the-counter pill	71	4	41
Over-the-counter pericoital pill	68	3	27
Pericoital pill	64	2	21
Self-removable IUD	61	3	18
Over-the-counter diaphragm	60	2	14

Notes: A method is a perfect match if it has 100% of the features a woman said were extremely important. A method is a good match if it has at least 75% of a woman's extremely important features.

tures among our sample. Women want contraceptives that reliably prevent pregnancy and do so without introducing unwanted physiological responses. Additionally, they want their method to be easy to use, and would prefer not to have to use it with each act of intercourse. Further, women want the method to be affordable and easy to get, and they want control over whether and when to use it.

We found a large gap between the contraceptive features women want and the features of currently available methods. Improvements in access and new contraceptive technologies may narrow this gap. For example, an over-the-counter oral contraceptive is a closer match with women's preferences than the prescription-only product. A pericoital contraceptive pill may be a good match for women whose needs are not currently being met.

Inconsistent contraceptive use is likely due to both poor access and method dissatisfaction. The large number of reported features that women consider extremely important indicates that strong feelings and complex considerations go into selecting a contraceptive method. Women would likely be more satisfied if they had access to a method that was aligned with their preferences; this in turn, may lead to more consistent use.

Limitations

One limitation of our methodology is that contraceptives that had more of the features we asked about were relatively advantaged in the match score. For example, we asked women whether they wanted a method that is easy to get and also a method they could get without going to a clinic. A nonprescription method could match both of these items, whereas a prescription method would match neither. We did not choose features in an effort to assign an equal number of features for each contraceptive method—realistically, not all contraceptives have the same number of positive attributes. However, our emphasis on access rather than, say, clinical action or desired duration of use influenced the percentage match. Our analysis is further limited because we lacked information on the relative importance of each method feature to each woman, and many women listed multiple features as "extremely important." Further discussions of method features may benefit from such inquiry.

Conclusion

The method features presented in this study are not intended for use as a clinical guide to choosing a contraceptive method. We did not find a higher percentage match for women who indicated they intend to use a specific method than for women who did not choose that method; nor did we find a correlation between a low percentage match for the method a woman intended to use following the survey and a higher willingness to engage in unprotected intercourse. Instead, these data can be used to design and promote contraceptive methods that may satisfy more of women's preferences in the hopes of increasing contraceptive satisfaction and encouraging consistent and effective use.

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