

Factors Associated with Contraceptive Choice and Inconsistent Method Use, United States, 2004

By Jennifer J. Frost
and Jacqueline
E. Darroch

Jennifer J. Frost is
senior research
associate, and
Jacqueline E. Darroch
is senior fellow, both
with the Guttmacher
Institute, New York.

CONTEXT: Pregnancies among contraceptive users account for nearly half of all unintended pregnancies and are almost entirely due to inconsistent or incorrect contraceptive use. Understanding what factors contribute to inconsistent contraceptive behavior can help efforts to reduce unintended pregnancy.

METHODS: In 2004, a nationally representative sample of women aged 18–44 using reversible contraceptive methods were surveyed to examine factors associated with contraceptive choice and with inconsistent use of the pill and condoms. Bivariate and multivariate analyses were used to examine the data.

RESULTS: Contraceptive choice was associated with a range of socioeconomic and partnership characteristics, and with pregnancy-, method- and provider-related experiences and attitudes; inconsistent pill or condom use was associated mainly with partnership, experiential and attitudinal factors. For example, not having a college education was negatively associated with pill use (odds ratio, 0.6) and positively associated with use of long-acting methods (1.8–1.9). Women for whom avoiding pregnancy was only a little or not important had reduced odds of using the pill (0.4) and elevated odds of using other methods, such as withdrawal or periodic abstinence (4.4), and of using condoms inconsistently (2.6). Use of a method chosen mostly out of dislike of other methods was positively associated with condom use (4.0) and negatively associated with use of the pill or long-acting methods (0.4 for each). Women who were not completely satisfied with their method were more likely than others to use their method inconsistently (1.6 for pill users and 1.9 for condom users).

CONCLUSIONS: Greater efforts are needed to provide women and their partners with a range of method options, to facilitate selection of methods that best suit their needs and circumstances, and to identify and assist users who are dissatisfied or are having difficulties using contraceptives effectively.

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The overwhelming majority of fertile, sexually active women of reproductive age in the United States who do not want to become pregnant practice contraception (89% in 2002).¹ Half of all unintended pregnancies—some 1.5 million annually—occur among contraceptive users;² of these, nine in 10 result from inconsistent or incorrect method use, and only one in 10 from method failure.*

Because contraceptive methods differ in effectiveness and because consistent and correct use is often difficult, estimated perfect-use failure rates and typical-use failure rates differ widely. For example, oral contraceptives have a perfect-use failure rate of 0.3% and a typical-use failure rate of 8%; for condoms, rates are 2% and 15%.³ Although failing to adhere to a medication's requirements can

reduce its effectiveness, roughly half of people taking medication do not take it as prescribed.^{4–6} It is therefore not surprising that many women and men have difficulty using contraceptives according to methods' particular requirements.^{7–10}

Which method a woman uses has important implications for how successful she will be in preventing pregnancy. Users should select methods that optimize effectiveness and ease of use. Much of the early research on contraceptive choice focused on method acceptability, comparing what women said they value in a method (e.g., effectiveness, ease of use, and mild or no side effects) with the attributes of different methods.¹¹ Other research has evaluated method choice using decision-making theory and behavioral science,^{12–14} or from a user perspective that includes multiple aspects of the context of women's lives.^{15,16} Factors associated with contraceptive choice or effectiveness of use include women's personal characteristics and childbearing goals;^{17–28} sexual relationship characteristics and partner influences;^{23,26,28–37} social and economic characteristics;^{30,35,36,38–41} community, family and peer relationships;^{19,23,24,28,35,36} service access and provision;^{28,35} and method-specific experiences

*The proportion of pregnancies among contraceptive users that resulted from method failure was estimated by dividing the weighted average of perfect-use failure rates for all reversible contraceptive users by the weighted typical-use failure rate for all reversible users: 1.4/12.4=11.3% (sources: For perfect-use failure rate—Hatcher RA et al., *Contraceptive Technology*, 19th ed., New York: Ardent Media, 2007; for typical-use failure rate—Kost K et al., Estimates of contraceptive failure from the 2002 National Survey of Family Growth, *Contraception*, 2008, 77(1):10–21).

and attitudes.^{23,24,27,37,42} For example, women who are ambivalent toward pregnancy or contraceptive use exhibit practices that increase their risk of unintended pregnancy.^{17,43–46}

To date, however, most empirical research on method choice and efficacy has focused narrowly on young people,^{18–20,29–33} low-income individuals,^{21,22,24,35} people from particular racial and ethnic groups,^{23,24,36} and clinic-based samples,^{25–28,42,47} and has investigated specific types of method use problems or specific methods.^{21,23,24–27,38} The few nationally representative studies available have focused mainly on examining how contraceptive choice and efficacy are associated with basic demographic, socioeconomic and relationship characteristics.^{37,39–41,48}

In this article, we build upon prior research, presenting findings from the first nationally representative survey of U.S. women to include detailed data on contraceptive behavior and a broad range of explanatory factors. Analyses using these data have shown important associations between women's attitudes and experiences and their likelihood of experiencing periods of contraceptive nonuse while at risk for unintended pregnancy.^{49,50} Here, we investigate factors associated with women's method choice and consistency of use among those using the most popular reversible methods—the pill and the male condom. This information is critical for assessing how to improve contraceptive service provision and better support effective contraceptive use.

METHODS

Survey

In early 2004, trained female interviewers conducted telephone interviews with a nationally representative sample of 1,978 women who were aged 18–44 and at risk of unintended pregnancy.* Eligible women were identified through list-assisted random digit dialing. Among an initial sample of nearly 95,000 telephone numbers, 51% were identified as likely households. Of these, 60% were screened for the presence of a woman aged 18–44; at the others, the person who answered the phone refused to participate in the screening (15%), failed to begin or complete the screening after multiple callbacks (23%) or could not communicate with the interviewer (2%).

Interviewers screened and interviewed participants in either English or Spanish, using a computer-assisted telephone interview system; on average, interviews lasted 30 minutes. Some 5,593 (20%) of the screened households included a woman aged 18–44, of whom, 95% were fully screened for study eligibility. A total of 2,670 eligible women were identified, and 2,000 completed interviews, for a completion rate of 75%. We excluded 22 surveys from analysis because the respondents had had sterilizing operations that they had not reported during screening. The net response rate among all women estimated to be eligible from sampled households was 43%.[†]

Measures

•**Contraceptive behavior.** We defined current contraceptive use as use of a method in the month preceding the interview. Women who reported having used more than one method were classified according to their most effective method; long-acting methods (i.e., the IUD, implant, injectable and patch) were considered the most effective, followed by oral contraceptives, male condoms and other methods (i.e., withdrawal, periodic abstinence, spermicides and other barrier methods).[‡]

Current method users answered questions about consistency and correctness of use in the past three months, including frequency of use for coital-related methods (every time they had sex, most of the time, half the time, less than half the time or none of the time); occurrence of condoms' breaking, slipping or being put on late; number of missed pills; and reasons for inconsistent use. We created composite consistency measures for pill and condom users. Women who had not missed a single active pill in the past three months were considered consistent users;[§] variation in the time of day pills were taken was not included, because guidelines for correct use focus only on missing pills⁵¹ and mistiming of pills alone rarely results in conception.⁵² Women whose partners had used a condom every time they had sex and had always put it on before beginning sexual contact were considered consistent users. We included the measure of correctness of use because it is essential to effectiveness and is within users' control. We did not include condom breakage or slippage, because these events are not always due to users' actions. We did not collect consistency information for users of long-acting methods or periodic abstinence.

•**Explanatory factors.** Women answered questions about their socioeconomic and sexual partnership characteristics, and their method- and provider-related experiences and attitudes. Complete details about measurements of some explanatory factors have been published elsewhere^{49,50} or are available from the authors.

Socioeconomic characteristics measured in the survey were women's age, race and ethnicity, nativity status (for Hispanic respondents only, education, and poverty and health insurance status. For poverty status, we used federal eligibility criteria for subsidized family planning

*Women were considered at risk of unintended pregnancy if, at the time of the survey, they had had heterosexual intercourse in the past year; were not pregnant, two months or less postpartum, or trying to become pregnant; and were not sterile for either contraceptive or noncontraceptive reasons.

†We calculated the net response rate by multiplying the completion rate (75%) by the household screening rate (60%), and multiplying the product by the participation rate of age-eligible women (95%). On the basis of households that completed screening, we estimated that 10% of the 48,000 likely households had an eligible woman present.

‡Active pills are those that contain hormones. Women were asked "How many pills that you were supposed to take did you skip? (That is, how many of the hormone pills did you skip?)"

TABLE 1. Percentage distribution of nonsterilized women 18–44 at risk of unintended pregnancy, by selected characteristics, Guttmacher Institute 2004 survey of women at risk and 2002 National Survey of Family Growth (NSFG)

Characteristic	Survey of women		NSFG (N=28,255,000)
	Unweighted (N=1,978)	Weighted† (N=1,978)	
Age			
18–24	24.8	31.7	31.7
25–34	43.0	39.9	39.9
35–44	32.3	28.4	28.4
Marital status			
Married	61.0	48.0	48.0
Formerly married	8.3	10.1	10.0
Never-married	30.6	42.1	42.1
Race/ethnicity			
White	64.0	66.5	66.5
Hispanic	17.6	14.5	14.5
Black	11.5	12.9	12.9
Asian/other	7.0	6.1	6.1
% of federal poverty level			
<100	14.8	16.4	17.0
100–249	29.7	30.2	29.7
≥250	55.4	53.4	53.4
Parity			
0	33.3	38.8	42.2
1	24.2	23.5	24.0
2	26.6	24.1	20.4
≥3	15.8	13.6	13.5
Desire to have (more) children			
Yes	49.5	53.5	55.1
No	41.7	38.1	42.8
Unsure	8.8	8.4	2.1
Total	100.0	100.0	100.0

†Weighted by age, marital status, and race and ethnicity.

services to group women into two income categories: below 250% of the federal poverty level and at or above 250%; in 2002, 250% of poverty was equivalent to a total annual income of \$45,250 for a family of four. For insurance status, those who had had both private insurance and Medicaid coverage during the last year (5% of women) were combined with women who had had only Medicaid coverage.

Several sexual partnership characteristics were included: current union status, duration of current relationship, number of sexual partnerships in the prior year and frequency of intercourse in the prior three months. Other variables were investigated, but were not significant in exploratory regressions and were eliminated from the final models: women’s assessment of the adequacy of partner communication about contraception, women’s level of worry about HIV and AIDS, women’s and their

*The seven statements were “The people who work there make an effort to find out my needs”; “The health care I receive there is of good quality”; “The rooms and equipment are all clean”; “The staff who work there treat me with respect”; “Getting service there is orderly and pleasant”; “I usually see the same doctor or clinician every time I go there”; and “If I have questions about my contraceptive method, I know I can call the office and talk to someone.”

partners’ desire for additional children and whether women’s partners had ever insisted on sex in the past three months when they were not interested.

Pregnancy-related experiences and attitudes explored in the survey were parity, experience of an unintended pregnancy, how important respondents felt it was to avoid becoming pregnant at the time (measured on a four-point scale ranging from very important to not at all important) and how strongly they agreed or disagreed with the statement “It doesn’t matter whether I use birth control or not; when it is my time to get pregnant, it will happen” (measured on a five-point scale ranging from strongly agree to strongly disagree).

To assess method-related experiences and attitudes, we asked about duration of use, how satisfied or dissatisfied women were with their current method (measured on a five-point scale ranging from completely satisfied to completely dissatisfied) and what motivated women’s method choice. Two questions explored motivations underlying method choice: “Would you say that you are using [method] now mostly because you like this method or mostly because you don’t like the other methods available?” and “If you could use any birth control method available and you did not have to worry about cost, would you like to switch methods?” We combined the responses from two questions about the occurrence and patterns of dual or multiple contraceptive use to construct a measure that distinguishes between alternating or simultaneous use of more than one method in the prior month (no current dual or multiple method use, alternating dual or multiple method use and simultaneous dual or multiple method use).

In addition to asking women what type of provider they relied on for contraceptive or other women’s health care services (private doctor, clinic or no visit in the prior two years), we measured attitudes about provider experiences by asking women to rate, using a five-point Likert scale, how strongly they agreed or disagreed with seven statements about their last visit for such services.* We conducted a factor analysis and found that five items loaded together. These five items were grouped into a summary measure of provider satisfaction. The remaining two items were kept separate, and only one—whether women usually see the same doctor or clinician at each visit—was included in this analysis.

Analysis

We compared key demographic characteristics of our survey respondents with those of similar respondents to the 2002 National Survey of Family Growth (Table 1). Our respondents were slightly older, and greater proportions were married or Hispanic; we constructed sample weights that adjusted for these subgroup differences, while maintaining the same total sample size for both weighted and unweighted data. Weighted data were used in all analyses presented here, which are limited to the 1,640 respondents who were using a reversible

TABLE 2. Percentage distribution of women using reversible contraceptives, by current method used, according to socioeconomic and partnership characteristics; and odds ratios from logistic regression analyses examining associations between characteristics and use of specific methods

Characteristic	N	%					Odds ratio			
		Pill	Long-acting	Condom	Other	Total	Pill	Long-acting	Condom	Other
ALL	1,641	37.7	17.9	32.3	12.1	100.0	na	na	na	na
SOCIOECONOMIC										
Age										
18–24 (ref)	533	41.1	20.1	31.3	7.5	100.0	1.00	1.00	1.00	1.00
25–34	672	38.2	18.9	30.4	12.5†	100.0	0.94	0.78	1.17	1.54
35–44	436	32.9†	13.6†	36.3	17.2†	100.0	0.76	0.53**	1.57*	2.10**
Race/ethnicity/nativity										
White (ref)	1,133	43.2	15.4	28.0	13.4	100.0	1.00	1.00	1.00	1.00
Hispanic, native-born	88	33.0	17.0	37.5	12.5	100.0	0.69	0.82	1.75*	0.88
Hispanic, foreign-born	131	22.7†	31.1†	36.4	9.8	100.0	0.64	2.26**	1.32	0.41*
Black	191	24.7†	26.3†	43.2†	5.8†	100.0	0.53**	1.61*	1.98***	0.39**
Asian/other	96	23.2†	13.7§	51.6†	11.6	100.0	0.46**	1.04	2.77***	0.59
Education										
≥college (ref)	575	47.8	9.7	30.8	11.7	100.0	1.00	1.00	1.00	1.00
Some college	592	35.8†	20.6†	31.9	11.7	100.0	0.64**	1.94***	1.04	1.18
≤high school/GED	471	28.0†,‡	24.4†	34.5	13.1	100.0	0.62**	1.79**	0.99	1.41
% of federal poverty level										
<250 (ref)	830	31.9	22.2	35.3	10.6	100.0	1.00	1.00	1.00	1.00
≥250	810	43.7†	13.5†	29.1†	13.7	100.0	1.13	1.01	0.78	1.19
Insurance coverage										
Private only (ref)	1,129	42.9	14.6	29.9	12.6	100.0	1.00	1.00	1.00	1.00
Medicaid	290	22.4†	29.7†	37.2	10.7	100.0	0.52**	1.28	1.50*	1.09
None	219	31.2†	19.3‡	37.6	11.9	100.0	0.89	1.20	1.11	1.09
PARTNERSHIP										
Union status										
Married (ref)	822	34.7	18.0	31.1	16.2	100.0	1.00	1.00	1.00	1.00
Cohabiting	333	39.3	21.0	24.9	14.7	100.0	0.90	0.75	0.99	1.68*
Unmarried, not cohabiting	484	41.5†	15.5	39.3†,‡	3.7†,‡	100.0	0.87	0.57*	2.04**	0.48
Duration of relationship (in yrs.)										
>4 (ref)	917	33.0	17.2	33.4	16.4	100.0	1.00	1.00	1.00	1.00
2–4	281	44.8†	19.9	26.7	8.5†	100.0	1.64**	1.24	0.62*	0.63
<2	288	42.4†	17.7	31.9	8.0†	100.0	1.53*	1.33	0.59*	0.86
No relationship	155	44.2†	18.2	36.4	1.3†,‡,§	100.0	1.91*	1.66	0.52*	0.21*
No. of partners in last year										
1 (ref)	1,389	38.2	17.9	30.8	13.2	100.0	1.00	1.00	1.00	1.00
≥2	249	34.9	17.7	41.0†	6.4†	100.0	0.65*	1.13	1.43	1.16
Frequency of intercourse in last 3 mos.										
≥2 times/week (ref)	721	38.7	20.9	28.2	12.2	100.0	1.00	1.00	1.00	1.00
2–4 times/month	663	36.5	16.4	35.1†	11.9	100.0	0.85	0.87	1.52**	0.82
≤once/month	235	38.6	12.3†	36.4†	12.7	100.0	0.92	0.49**	1.34	1.98*

*p<.05. **p<.01. ***p<.001. †Significantly different from percentage in first row at p<.05. ‡Significantly different from percentage in second row at p<.05. §Significantly different from percentage in third row at p<.05. Notes: Ns are weighted. Regressions include all variables listed in Table 3 (page 98). Long-acting methods are the injectable, patch, IUD, ring and implant. Other methods are withdrawal, periodic abstinence, spermicides and other barrier methods. Medicaid category includes women who are covered by both Medicaid and private insurance. na=not applicable. ref=reference group.

contraceptive method during the month in which they were surveyed.

All tabulations were performed using SPSS, version 13. Bivariate associations were tested using two-tailed t tests with significance of p≤.05. Tests were adjusted for multiple comparisons using the Bonferroni correction factor.⁵³ We performed two sets of multiple logistic regression analyses. In the first, we constructed separate models to assess predictors of use of four methods among all method users. In the second, we constructed models assessing predictors of inconsistent use among all women whose most effective method was the pill or condoms.*

RESULTS

Method Choice

In 2004, 38% of all women aged 18–44 using reversible methods were using oral contraceptives (Table 2); 18% were using other hormonal or long-acting methods (7% injectable, 5% patch and 5% IUD), 32% male condoms

*We also conducted the method choice analyses using multinomial logistic regression, with the most commonly used method—oral contraceptives—as the reference category. The results closely matched those obtained using separate logistic regressions for each method, but were more cumbersome to report and are not included here.

TABLE 3. Percentage distribution of women using reversible contraceptives, by current method used, according to pregnancy-, method- and provider-related experiences and attitudes; and odds ratios from logistic regression analyses examining associations between experiences and attitudes and use of specific methods

Experience or attitude	N	%					Odds ratio			
		Pill	Long-acting	Condom	Other	Total	Pill	Long-acting	Condom	Other
ALL	1,641	37.7	17.9	32.3	12.1	100.0	na	na	na	na
PREGNANCY										
Parity										
0 (ref)	637	49.8	11.4	31.2	7.5	100.0	1.00	1.00	1.00	1.00
1	377	32.1†	21.8†	31.6	14.6†	100.0	0.81	1.67*	0.87	1.20
≥2	626	28.8†	21.9†	33.8	15.5†	100.0	0.70	1.97**	0.87	1.19
No. of unintended pregnancies										
0 (ref)	976	43.9	12.6	33.2	10.3	100.0	1.00	1.00	1.00	1.00
≥1	664	28.8†	25.6†	30.9	14.8†	100.0	0.73*	2.10***	0.66**	1.30
Importance of avoiding pregnancy										
Very (ref)	1,045	40.5	18.8	33.7	7.1	100.0	1.00	1.00	1.00	1.00
Somewhat	335	41.5	17.3	25.7†	15.5†	100.0	0.96	0.91	0.83	2.01***
A little/not	261	21.9†,‡	15.0	35.0	28.1†,‡	100.0	0.38***	0.77	1.14	4.42***
Fatalistic attitude toward pregnancy/birth control										
Disagree/neutral (ref)	1,168	40.9	17.7	31.9	9.5	100.0	1.00	1.00	1.00	1.00
Agree	473	30.0†	18.2	33.2	18.6†	100.0	0.96	0.82	0.82	1.91***
METHOD AND PROVIDER										
Reason for method use										
Mostly like method/both like and dislike (ref)	1,017	46.1	21.9	21.9	10.0	100.0	1.00	1.00	1.00	1.00
Mostly don't like other methods	624	24.1†	11.2†	49.1†	15.6†	100.0	0.37***	0.42***	4.04***	1.42*
Would change method if cost were not an issue										
No (ref)	1,134	42.6	19.6	27.0	10.7	100.0	1.00	1.00	1.00	1.00
Yes	506	26.8†	13.8†	44.0†	15.4†	100.0	0.58***	0.46***	2.18***	1.90***
Type of provider										
Private doctor (ref)	1,031	41.8	16.8	28.8	12.6	100.0	1.00	1.00	1.00	1.00
Clinic	472	38.0	23.1†	29.3	9.6	100.0	1.06	1.05	0.90	0.97
None	137	6.6†,‡	7.3†,‡	68.6†,‡	17.5‡	100.0	0.10***	0.33**	4.71***	1.57
Model R ² (Nagelkerke)	na	na	na	na	na	na	0.269	0.194	0.267	0.217

*p<.05. **p<.01. ***p<.001. †Significantly different from percentage in first row at p<.05. ‡Significantly different from percentage in second row at p<.05. Notes: Ns are weighted. Regressions include all variables listed in Table 2. Long-acting methods are the injectable, patch, IUD, ring and implant. Other methods are withdrawal, periodic abstinence, spermicides and other barrier methods. na=not applicable. ref=reference group.

and 12% other methods (6% periodic abstinence and 6% withdrawal). Twenty-nine percent of women reported using more than one method, and 41% had been using their method for at least five years (not shown). Thirty-seven percent of reversible method users, however, reported not being completely satisfied with their method; a similar proportion (38%) reported using their current method mostly because they disliked other options, and slightly fewer (31%) would change methods if not for the cost. Some 58% of women who were using condoms and 24% of those using the pill reported choosing those methods because they did not like other methods.

•**Oral contraceptives.** Socioeconomic and sexual partnership characteristics, as well as pregnancy- and method-related experiences and attitudes, were significantly associated with oral contraceptive use in bivariate analyses. For example, a greater proportion of white women than of foreign-born Hispanics, blacks, and Asians and other women were using the pill (43% vs. 23–25%;

Table 2). Also, pill use was less common among women in relationships of more than four years' duration than among those in shorter relationships or not currently involved (33% vs. 42–45%). In addition, a greater proportion of women who had ever had an unintended pregnancy than of those who had not were using the pill (44% vs. 29%; Table 3). Furthermore, pill use was more common among women who felt that it was very important to avoid pregnancy than among those who felt it was not or only a little important (41% vs. 22%), and among women who disagreed with the statement that it does not matter whether one uses a method than among those who agreed (41% vs. 30%).

In multivariate analyses, blacks and Asians and other women had half the odds of white women of using oral contraceptives (odds ratios, 0.5; Table 2); women who had no more than a high school education or some college were less likely than college graduates (0.6), and women covered by Medicaid were less likely than those with private insurance (0.5), to use the pill. In addition, pill

use was positively associated with not currently being in a relationship of more than four years' duration (1.5–1.9), and negatively associated with having had two or more partners in the last year (0.7) and ever having had an unintended pregnancy (0.7; Table 3). Finally, compared with women who felt that it was very important to avoid pregnancy, women who felt that it was a little or not important had reduced odds of using the pill (0.4); pill use was also negatively associated with choosing a method mostly because of dislike of other options and wanting to change methods if cost were not an issue (0.4 and 0.6, respectively).

•**Long-acting methods.** All of the included socioeconomic characteristics were significantly associated with use of long-acting methods in bivariate analyses (Table 2). For example, 20% of 18–24-year-olds used long-acting methods, compared with 14% of women aged 35–44; greater proportions of blacks and foreign-born Hispanics than of whites used such methods (26–31% vs. 15%). However, only one sexual partnership characteristic was significant: Long-acting method use was more common among women who had sex two or more times a week than among those who had sex no more than once a month (21% vs. 12%). Greater proportions of women who had ever had an unintended pregnancy or a birth than of those who had not were using long-acting methods (22–26% vs. 11–13%; Table 3). And long-acting method use was less common among women who chose their method mostly because they disliked other options than among those who liked their method (11% vs. 22%) and among those who would change methods if cost were not an issue than among those who would not (14% vs. 20%).

After adjustment for all measured factors, black women and foreign-born Hispanics had higher odds than white women of using long-acting methods (odds ratios, 1.6 and 2.3, respectively; Table 2), and women who had no more than a high school education or some college had higher odds than college graduates of using such methods (1.8–1.9). Women aged 35–44 were less likely than 18–24-year-olds (0.5), women who were unmarried and not cohabiting were less likely than married women (0.6) and women who had sex once or less a month in the last three months were less likely than those who had sex two or more times a week (0.5) to use long-acting methods. In addition, women who had ever given birth or had ever had an unintended pregnancy had elevated odds of using long-acting methods (1.7–2.1; Table 3). Women who reported choosing their method mostly because they disliked other methods and those who would like to change their method if cost were not an issue were less likely than those who did not share these sentiments to be using long-acting methods (0.4–0.5).

•**Male condoms.** Condom use was more common among black women and Asians and other women than among whites (43–52% vs. 28%; Table 2), and among unmar-

ried and noncohabiting women than among their married counterparts (39% vs. 31%). Also, compared with women who had had sex at least twice a week, greater proportions of women who had sex less frequently were using condoms 35–36% vs. 28%). In addition, condom use was more common among women who chose their method mostly because they disliked other options than among those who liked their method (49% vs. 22%; Table 3) and among those who would change methods if not for the cost than among those who would not (44% vs. 27%).

In multivariate analyses, the odds of using condoms were higher among women aged 35–44, minority groups other than foreign-born Hispanics, women on Medicaid, those who were unmarried and not cohabiting, and those who had had sex 2–4 times a month in the last three months (odds ratios, 1.5–2.8; Table 2). Women not currently in a relationship and those in relationships of less than four years' duration had reduced odds of using condoms (0.5–0.6), as did those who had ever had an unintended pregnancy (0.7; Table 3). Furthermore, condom use was positively associated with choosing the method mostly because of dislike of other methods (4.0) and with wanting to change methods if cost were not an issue (2.2).

•**Other methods.** Eight percent of 18–24-year-olds reported using other contraceptive methods (mostly periodic abstinence and withdrawal), compared with 13–17% of older women (Table 2); a smaller proportion of black women than of whites used such methods (6% vs. 13%). Other method use was least common among unmarried, noncohabiting women (4%) and those not in a current relationship (1%). In addition, use of other methods was associated with all of the pregnancy- and method-related factors: For example, use of other methods was more common among women who felt that it was not or only a little important to avoid pregnancy than among those who felt it was very important (16–28% vs. 7%; Table 3), and among women who chose their method mostly because they disliked other options than among those who liked their method (16% vs. 10%).

Mirroring the bivariate findings, in multivariate analyses, women's use of other contraceptive methods was positively associated with being aged 35–44, cohabiting and having sex once a month or less during the previous three months (odds ratios, 1.7–2.1; Table 2). Foreign-born Hispanic women and blacks were less likely than whites to use other methods (0.4 each), and women who were not currently in a relationship were less likely than those in a long-term relationship to use such methods (0.2). In addition, use of other methods was positively associated with not believing that it was very important to avoid pregnancy (2.0–4.4; Table 3), having a fatalistic attitude toward pregnancy and birth control (1.9), choosing a method mostly because of dislike of other options (1.4) and wanting to change methods if not for the cost (1.9).

TABLE 4. Percentage of women using oral contraceptives or condoms who reported inconsistent use, by socioeconomic and partnership characteristics; and odds ratios from logistic regression analyses examining associations between characteristics and inconsistent method use

Characteristic	Pill		Condom		Odds ratio	
	N	%	N	%	Pill	Condom
ALL	619	38.2	529	61.1	na	na
SOCIOECONOMIC						
Age						
18–24 (ref)	219	44.7	167	62.0	1.00	1.00
25–34	257	34.5	204	63.2	0.77	1.21
35–44	143	35.0	158	57.2	0.92	1.16
Race/ethnicity/nativity						
White (ref)	490	37.3	317	59.0	1.00	1.00
Hispanic, native-born	29	43.3	33	63.6	1.79	1.01
Hispanic, foreign-born	30	36.7	48	81.3†	2.22	3.19*
Black	47	47.9	82	63.4	1.45	1.04
Asian/other	22	34.8	49	49.0§	0.72	0.47
Education						
≥college (ref)	275	38.8	177	61.9	1.00	1.00
Some college	212	35.8	189	57.7	0.82	0.78
≤high school	132	40.5	163	64.4	1.12	0.69
% of federal poverty level						
<250 (ref)	265	37.4	293	66.6	1.00	1.00
≥250	354	39.0	236	54.4†	1.04	0.76
Insurance coverage						
Private only (ref)	485	39.2	338	58.0	1.00	1.00
Medicaid	65	38.5	108	70.4	0.69	1.84
None	68	30.9	82	62.2	0.49*	0.86
PARTNERSHIP						
Union status						
Married (ref)	285	34.7	256	63.7	1.00	1.00
Cohabiting	131	34.4	83	72.3	0.63	1.58
Unmarried, not cohabiting	201	45.8†	190	53.2‡	0.84	0.80
Duration of relationship (in yrs.)						
>4 (ref)	303	33.4	306	63.6	1.00	1.00
2–4	126	38.9	75	50.7	1.15	0.63
<2	122	41.5	92	72.5‡	1.09	0.95
No relationship	68	52.2†	56	42.9†,§	1.57	0.62
No. of partners in last year						
1 (ref)	530	35.1	427	60.2	1.00	1.00
≥2	87	57.5†	102	64.7	2.14*	1.89
Frequency of intercourse in last 3 mos.						
≥2 times/week (ref)	279	37.6	203	67.0	1.00	1.00
2–4 times/month	242	37.3	233	59.2	1.16	1.05
≤once/month	91	41.8	86	53.5	0.91	0.92

*p<.05. †Significantly different from percentage in first row at p<.05. ‡Significantly different from percentage in second row at p<.05. §Significantly different from percentage in third row at p<.05. Notes: Women who reported having used more than one method were classified according to their most effective method. Inconsistent pill use is defined as missing one or more pills in prior three months; inconsistent condom use is defined as not using a condom at each sex in prior three months or putting the condom on late at least once. Ns are weighted. Regressions include all variables listed in Table 5. Medicaid category includes women who are covered by both Medicaid and private insurance. na=not applicable. ref=reference group.

Inconsistent Method Use

•**Oral contraceptives.** Virtually all pill users (98%) reported having a reminder or routine to help them remember to take their pill every day. Yet, 38% (28–58% across subgroups; Tables 4 and 5) reported having missed at least one active pill in the prior three months: Eight percent had missed one, 11% two and 19% three or more (not shown). Some 71% of those who had missed a pill had simply forgotten to take it; 10% reported access problems (e.g., they did not have their

pills with them), and 8% cited variations in their regular schedule.

At the bivariate level, women’s socioeconomic characteristics were not associated with inconsistent pill use (Table 4); partnership characteristics and women’s experiences and attitudes, however, were more important. For example, a greater proportion of women who had had two or more partners in the past year than of those who had only had one had used the pill inconsistently (58% vs. 35%). In addition, a smaller proportion of women with two or more children than of those who had had no children had used the pill inconsistently (28% vs. 43%; Table 5). Furthermore, inconsistent use of pills was more common among women who were not completely satisfied with their method than among those who were completely satisfied (48% vs. 35%), among women who were not very satisfied with their provider than among those who were (47% vs. 34%) and among women who usually did not see the same clinician at every visit than among those who did (51% vs. 36%).

In multivariate analyses, few background characteristics were significant predictors of inconsistent pill use. Women who had had two or more sexual partners in the past year had twice the odds of others of using the pill inconsistently (odds ratio, 2.1; Table 4); women without health insurance had half the odds of those with private insurance, and women who had had two or more births had half the odds of those who had had none, of inconsistent use. Women’s method- and provider-related experiences, however, were more important. Inconsistent pill use was positively associated with having used the method for less than two years (1.8; Table 5), being not completely satisfied with the method or not very satisfied with a provider (1.6 each) and not usually seeing the same clinician (1.7).

•**Male condoms.** Among women who reported condoms as their primary or most effective method, 81% reported using one at last sex; 51% had used one every time they had sex in the prior three months, 28% had used one most of the time, and 21% had done so no more than half the time. Twenty-eight percent of women relying on condoms reported at least one time in the prior three months when a condom was put on after sex had started. Overall, 61% of users had not used the method every time they had sex or had put it on after beginning sex at least once in the prior three months (Table 4).

The most common reason for not using a condom consistently was not having a condom available or not expecting to have sex (25%; not shown). Some 10–12% of women reported irregular use because they or their partner did not want to use a condom, they got “carried away” or they thought it was the safe time of the month.

In bivariate comparisons, a greater proportion of foreign-born Hispanic women than of whites used condoms inconsistently (81% vs. 59%; Table 4). In addition, inconsistent use of condoms was more common among women who felt that avoiding pregnancy was only a little or not important than among those who thought it was

very important (77% vs. 58%; Table 5), among women who were using multiple methods than among those who were using only the condom (82–99% vs. 49%), among women who had been using condoms for less than two years than among those using the method five or more years (69% vs. 56%), and among women who were not completely satisfied with the method than among those who were (66% vs. 55%).

In multivariate analysis, only one background characteristic—race and ethnicity—was associated with inconsistent condom use: Foreign-born Hispanic women had more than three times the odds of whites of using condoms inconsistently (odds ratio, 3.2; Table 4). And unlike inconsistent pill use, inconsistent condom use was associated with women's experiences with unintended pregnancy and attitudes about pregnancy: Having had an unintended pregnancy was negatively associated with using condoms inconsistently (0.6; Table 5), and believing that avoiding pregnancy was only a little or not important was positively associated with inconsistent use (2.6). But like inconsistent pill use, inconsistent condom use was positively associated with using the method for fewer than two years and with being not completely satisfied with it (1.9 each).

Finally, among the 18% of condom users who reported alternating between condoms and other less effective methods, almost all reported not using condoms all the time—resulting in extremely elevated odds of inconsistent use (odds ratio, 77.8). However, even among the 10% of condom users who reported simultaneously using condoms with another method, the odds of inconsistent use were elevated (6.3).*

Nonsignificant Findings

In preliminary analyses, several additional variables had associations, in the expected directions, with the dependent variables. For example, a greater proportion of women who were worried about their risk of contracting HIV than of those who were not worried were using condoms (37% vs. 30%). In addition, use of long-acting methods was more common among women who felt that communication with their partner about contraception was inadequate or who reported that their partners insisted on sex when they were not interested than among others (24% vs. 17% for both variables); inconsistent pill use also was more common among women reporting unwelcome sex than among others (49% vs. 36%). Typically, these characteristics were also strongly associated with other variables in our model (e.g., race and ethnicity or marital status) and therefore had no association with method choice or consistency of use in a multivariate model. Measures of women's and their partners' expectations for additional childbearing, including a category for those who were unsure or who reported disagreement with their partners, were not associated with method choice or consistency of use in either bivariate or multivariate analyses.

TABLE 5. Percentage of women using oral contraceptives or condoms who reported inconsistent use, by pregnancy-, method- and provider-related experiences and attitudes; and odds ratios from logistic regression analyses examining associations between experiences and attitudes and inconsistent method use

Experience or attitude	Pill		Condom		Odds ratio	
	N	%	N	%	Pill	Condom
ALL	619	38.2	529	61.1	na	na
PREGNANCY						
Parity						
0 (ref)	318	42.6	199	58.8	1.00	1.00
1	121	41.3	119	65.5	1.06	1.04
≥2	180	28.3†	211	60.7	0.50*	0.82
No. of unintended pregnancies						
0 (ref)	429	38.0	205	63.4	1.00	1.00
≥1	191	38.4	324	57.6	1.40	0.57*
Importance of avoiding pregnancy						
Very (ref)	423	39.0	352	57.7	1.00	1.00
Somewhat	139	38.1	86	58.6	1.16	0.92
A little/not	57	32.8	91	76.7†,‡	0.86	2.58**
Fatalistic attitude toward pregnancy/birth control						
Disagree/neutral (ref)	477	40.0	372	57.3	1.00	1.00
Agree	142	32.4	157	70.1†	0.81	1.48
METHOD						
Dual method use						
No (ref)	431	35.7	384	49.0	1.00	1.00
≥2 methods together	130	40.5	51	82.4†	1.26	6.33***
≥2 methods switching	58	50.8	94	98.9†,‡	1.45	77.79***
Duration of current method use (in yrs.)						
<2	144	48.6	163	68.7	1.78*	1.91*
2–4	175	34.9†	130	59.7	0.89	1.42
≥5 (ref)	296	34.8†	232	56.0†	1.00	1.00
Satisfied with method in past year						
Completely (ref)	456	34.9	242	55.4	1.00	1.00
Not completely	161	48.1†	286	66.1†	1.56*	1.91**
PROVIDER						
Type of provider						
Private doctor (ref)	431	37.4	297	57.7	1.00	1.00
Clinic	179	40.2	138	67.6	1.01	1.39
None	9	44.4	94	61.7	0.43	1.43
Satisfied with provider						
Very (ref)	403	33.5	326	61.0	1.00	1.00
Not very	216	46.8†	203	61.1	1.59*	0.94
Usually see same clinician						
Yes/ no visit (ref)	514	35.6	431	60.3	1.00	1.00
No	106	50.9†	98	64.6	1.67*	0.99
Model R² (Nagelkerke)						
	na	na	na	na	0.159	0.405

*p<.05. **p<.01. ***p<.001. †Significantly different from percentage in first row at p<.05. ‡Significantly different from percentage in second row at p<.05. Notes: Women who reported having used more than one method were classified according to their most effective method. Inconsistent pill use is defined as missing one or more pills in prior three months; inconsistent condom use is defined as not using a condom at each sex in prior three months or putting the condom on late at least once. Ns are weighted. Regressions include all variables listed in Table 4. na=not applicable. ref=reference group.

DISCUSSION

Success in preventing unintended pregnancies requires long periods of effective contraceptive use; success, however, is also influenced by method type and adherence to the method's requirements for consistent and correct use. Many women of reproductive age and their

*We reran the regression predicting inconsistent condom use after excluding women who reported alternating between methods; the findings for all other predictors in the model remained the same.

partners who have had all the children they want choose sterilization (47% of women aged 40–44 rely on this method).¹ Others, including all couples who think they might want to have a child or another child, must choose among reversible contraceptive methods—a choice often driven by women’s socioeconomic, demographic and partnership characteristics.

Women who choose long-acting methods have the lowest probability of experiencing method failure.^{10,41} Not surprisingly, in this study, reversible method users who were strongly motivated to avoid method failure because they had had an unintended pregnancy or had already had children were more likely than others to choose these methods. The association of long-acting method use with disadvantage (low education and minority race or ethnicity) is likely influenced by a number of factors, including familiarity with these methods and their availability from publicly funded clinics. On the other hand, disadvantaged women were less likely than others to choose oral contraceptives, reflecting the greater likelihood of minority women’s using long-acting methods or condoms, as well as the greater likelihood of privately insured women’s choosing the pill. Women were more likely to choose condoms if they were unmarried, and were more likely to choose periodic abstinence or withdrawal if they were aged 35 or older or had infrequent sex; these findings at least partially reflect differing contraceptive needs during different types or phases of partnerships.

Although variation in method choice may reflect differences in the availability of methods from the providers serving different groups of women, it may also reflect access issues related to differing costs of methods. The likelihood of using condoms or other methods was elevated among women who reported not liking other options and those who would have switched methods if not for the cost. Dislike of and dissatisfaction with methods, as well as lack of access to the full range of methods, may steer some women—particularly those who are disadvantaged—toward methods that typically have relatively high use-failure rates. These associations are consistent with prior findings about subgroups of women more likely to have unintended pregnancies.²

Clearly, there is a need for continued contraceptive research and development to expand method options. In addition, to ensure that all women are able to choose a method unhindered by cost, continued and increased funding for public-sector family planning programs is needed, as well as coverage of all available methods within private health insurance plans.

In our analyses, few socioeconomic and demographic characteristics were associated with consistency of use; however, attitudes toward and experience with pregnancy were strongly associated with both method choice and consistency of use. Weaker motivation to avoid pregnancy was linked to choosing less effective methods and inconsistent method use, both of which are likely to

lead to reduced success in pregnancy prevention. This is consistent with prior results showing a strong association between women’s motivation to avoid pregnancy and gaps in contraceptive use.⁵⁰ Federal guidelines for improving preconception care recommend that primary care visits for all women of reproductive age routinely include risk assessment and counseling about current pregnancy intentions, with a goal of providing contraceptives to women who do not intend to conceive and of promoting preconception care strategies if and when women want to become pregnant.⁵⁴ Information about the association between weak motivation to avoid pregnancy and contraceptive behaviors likely linked with unintended pregnancy should be included in such counseling—as well as in other venues where pregnancy prevention is discussed—to help women with ambivalent attitudes to understand their elevated risk of pregnancy while using contraceptives and to plan appropriately, with either more vigilant contraceptive practice, preconception care or both. Additional research exploring how and why women using contraceptives vary in their attitudes about pregnancy prevention would be useful.

Initiation of long-acting contraceptives and pills requires contact with a medical provider, and this contact can have long-term implications for successful method use. Women using oral contraceptives were more likely to take their pills consistently if they were very satisfied with their provider and if they usually saw the same clinician than otherwise. Users of coitus-related methods may need both information and education about relative effectiveness of method choices and more support for successful use. Our finding of a higher level of inconsistent use among condom users than among pill users is consistent with higher use-failure rates seen in national data,^{39,41} and suggests that perfect use is more difficult with coitus-related methods like the condom. In addition, less consistent method use in the first two years indicates the need for interventions that help women establish good method-use behaviors in the initial months of use.

Many couples use more than one method. In our study, the fact that women who simultaneously used condoms and another less effective method had elevated odds of inconsistent condom use suggests that it is important for clinicians and others counseling women to discuss strategies for successful dual method use. Counselors need to emphasize the importance of consistent and correct use of all methods, regardless of whether the methods are used for pregnancy prevention, STD prevention or both.

Study Limitations

Our study had several limitations. Our measures of inconsistent use for women who were using two or more methods—particularly those using condoms—do not necessarily reflect inconsistent contraceptive coverage. We tried to control for this by separating condom users into those who were alternating between using the

condom and another method (18%), those using the condom and another method simultaneously (10%) and those using the condom alone (72%). For those who alternated methods, however, we had no information regarding whether they used at least one method every time they had intercourse. This may have resulted in an overstatement of inconsistent total use among some women, but did not affect our conclusions regarding which factors are associated with inconsistent use (the same predictors were significant in a model that excluded women reporting alternating method use). In addition, for some method combinations (e.g., condoms plus periodic abstinence), the distinction between alternating and simultaneous use may not have been reported consistently by all respondents.

Response error, recall bias and nonresponse bias also may have affected our results; these limitations and our efforts to mitigate them have been discussed in detail previously.^{49,50} In particular, our analyses may have been affected by reporting bias related to consistency of use. Women typically report fewer episodes of inconsistent method use than electronic monitoring identifies.^{6,27} It is not clear whether or how our consistency results might have been affected by underestimation of the dependent variable.

Finally, because we used cross-sectional, retrospective data, we could not determine whether women's attitudes and experiences preceded their method choice or their recent inconsistent use. However, we believe that women's reports of their attitudes and experiences likely reflect (and can be used as a proxy for) attitudes and experiences that were relevant at the time they chose their current method or used it inconsistently.

Conclusion

The high levels of unintended pregnancy seen in national data among contraceptive users² and the parallel high levels of inconsistent method use reported by women in this study are troubling, but not surprising. Our findings suggest that certain groups of women—those less motivated to prevent pregnancy or less satisfied with contraceptive choices, for example—may be at high risk of contraceptive failure, because of both their choice of less effective methods and their inconsistent use. Providers may need to pay greater attention to women who use nonprescription methods, offering them instruction and support for consistent use. Given the inherent difficulty of using any method consistently and correctly over one's entire reproductive life, providers should counsel all women on an ongoing basis—not just when they are beginning method use—about using backup methods, including emergency contraception, using dual methods or avoiding sex whenever they have been inconsistent in their use of hormonal methods.

The paths to improvement include helping women and their partners choose methods they like, facilitating contraceptive users' switching between methods and

supporting their use of more effective methods. They also include expanding the contraceptive options that are available and accessible to potential users and extending the mandate of contraceptive care beyond method provision to include ongoing support and assessment of contraceptive needs throughout women's reproductive lives. This is a role for contraceptive providers, as well as for others who provide information, education and counseling about sexuality and reproductive health.

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Author contact: jfrost@guttmacher.org