HHS Public Access

Author manuscript

Am J Obstet Gynecol. Author manuscript; available in PMC 2020 April 01.

Published in final edited form as:

Am J Obstet Gynecol. 2019 April ; 220(4): 376.e1–376.e12. doi:10.1016/j.ajog.2018.12.022.

Predictors of contraceptive switching and discontinuation within the first 6 months of use among Highly Effective Reversible Contraceptive Initiative Salt Lake study participants

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Abstract

BACKGROUND: Nearly half of women will switch or discontinue using their selected contraceptive method in the first year. Research on early switching or discontinuation provides important clinical and public health insights, although few studies have assessed associated factors, particularly among longitudinal cohorts.

OBJECTIVE: The current study explores attributes associated with early contraceptive method switching or discontinuation (<6 months of initiation) among participants enrolled in the intervention cohorts of the Highly Effective Reversible Contraceptive Initiative Salt Lake Contraceptive Initiative (Utah, United States).

MATERIALS AND METHODS: Highly Effective Reversible Contraceptive Initiative Salt Lake participants have access to no-cost contraception for 3 years. This includes both the initial selection and the ability to switch or to discontinue methods without cost. Methods available included the following: nonhormonal behavioral methods (male/female condoms, withdrawal, diaphragms, cervical caps, and fertility awareness); short-acting methods (pill, patch, ring, and injectable); and long-acting methods (intrauterine devices and contraceptive implants). Participants completed surveys at baseline and at 1, 3, and 6 months. We collected data on participant demographics, contraceptive continuation, switching, and discontinuation, as well as factors associated with these changes, including established measures of pregnancy intention and ambivalence and reasons for switching or discontinuing. We conducted descriptive statistics, univariable, and multivariable Poisson regression analyses to assess predictors of both discontinuation and switching. We also conducted χ^2 analyses to compare reported reasons for stopping between switchers and discontinuers.

RESULTS: At 6 months, 2,583 women (70.0%) reported continuation of their baseline method, 367 (10%) reported at least 1 period of discontinuation, 459 (12.4%) reported switching to a

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The authors report no conflict of interest.

Clinical trial information: Date of registration: April 12, 2016; Date of study start: November 2014; Identification number: ; https://clinicaltrials.gov/ct2/show/NCT02734199

different method, and 279 (7.6%) did not provide 6-month follow-up. Factors associated with discontinuation included selection of a short-acting method (incidence rate ratio [IRR], 2.49; 95% confidence interval [CI], 1.97, 3.12), report of Hispanic ethnicity (IRR, 1.45; 95% CI, 1.12, 1.89) and nonwhite race (IRR, 1.48; 95% CI, 1.08, 2.02), and having any future pregnancy plans, even years out. Participants with some college education were less likely to report discontinuation (IRR, 0.73; 95% CI, 0.57, 0.94). Selecting a short-acting method at baseline was also associated with increased likelihood of method switching (IRR, 2.29, 95% CI, 1.87, 2.80), as was having 2 or more children (IRR, 1.37; 95% CI, 1.08, 1.74). Women were less likely to switch if they were on their parents' insurance (IRR, 0.74; 95% CI, 0.56, 0.99). Among participants who switched methods, 36.9% switched to a long-acting reversible method, 31.7% switched to a short-acting hormonal method, and 31.1% switched to a nonhormonal behavioral method, such as condom use. Of participants providing a reason for stopping, 454 women (73.2%) reported side effects as 1 reason for switching or discontinuing their initial method.

CONCLUSION: Early contraceptive method switching and discontinuation are frequent outcomes of contraceptive use. These changes are common even with removal of contraceptive access barriers.

Keywords

contraception; discontinuation; family planning; switching; United States

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Supporting women's reproductive health through contraceptive services is a public health priority throughout the world. However, women's contraceptive health care needs do not end with method uptake. Method switching and method discontinuation are normal, expected aspects of women's contraceptive strategies over their reproductive life course. Reasons are varied, including reduced need (such as discontinuation because of planning a pregnancy) and method-related problems (such as experiencing side effects from a particular method).[1–5] In the United States, the average woman will start use of a contraceptive method an estimated 10 times over the course of her reproductive life.[6] In fact, it has been reported that 33–44% will switch or discontinue using their selected contraceptive method within 12 months, with certain methods, such as condom users, having even higher cessation rates.[5,6]

Yet, despite the ubiquity of method change, research specifically addressing contraceptive switching and discontinuation is limited. The majority of existing research uses large, cross-sectional datasets, such as the National Survey for Family Growth (United States), or the Demographic Health Surveys (low- and middle-income countries). These sources are limited in their ability to assess the kind of common changes that individuals make over the reproductive life course. Existing studies on this topic are not current, with the most recent reporting on switching and discontinuation data for all reversible methods being from 2002.[7] Contemporary studies can account for the increased uptake and acceptability of long-acting reversible contraception (LARC) in the past 10 years,[8,9] the introduction of additional hormonal contraceptive methods in the United States (ring in 2001 and patch in 2002), modifications of the contraceptive implant in 2006, novel oral emergency contraception in 2010, increased hormonal intrauterine device options from 2013 to 2017, and over-the-counter oral levonorgestrel emergency contraception in 2013, as well as the increased

availability of no-cost contraception through the 2010 Affordable Care Act[10] and contraceptive initiatives.[11–13]

Early switching and discontinuation, defined as switching to another method or discontinuation of a contraceptive method within 6 months of initiation, can decrease client satisfaction and provide challenges to medical providers.[6,8] Identifying the frequency and predictors of the normative behavior of early method change can shift goals from contraceptive uptake to access. This work will also aid in identifying sociodemographic characteristics and method experiences influencing these outcomes. The current study seeks to identify factors associated with early method change (both switching and discontinuation) using data collected through the Highly Effective Reversible Contraceptive Initiative (HER Salt Lake) study, a multi-year, prospective contraceptive access cohort study.[14]

Materials and Methods

Study overview

During the 1-year intervention period of the HER Salt Lake Contraceptive Initiative, 4 family planning health centers in Salt Lake County provided no-cost, reversible contraception to women presenting for care from March 28, 2016, to March 25, 2017.[14] All qualifying women from the intervention period have continued no-cost access to their initial method of contraception and also have the ability to switch methods at any point for up to 3 years at no cost.

Study population

This analysis includes only participants who received no-cost contraceptive care during the intervention periods and who enrolled in the prospective, longitudinal survey arm of the study. Detailed information around the initiative, participant recruitment, and enrollment in the HER Salt Lake study is available elsewhere.[14] Briefly, HER Salt Lake includes a large cohort population of women[a] aged 16 to 45 years, who came to a participating clinic as a new contraceptive client or an existing client seeking a new contraceptive method during the study period. Reproductive health educators trained providers at 4 participating clinics to discuss alternative method options with women, in the event that they did not like or had problems with their selected method, to address method switching, and to form a contingency plan; however, we did not assess fidelity to this training as part of the study. One clinic provides abortion and postabortion contraceptive services and does not receive Title X funding, and the 3 other clinics serve contraceptive clients using Title X funding.

Eligible clients who accessed contraceptive services during the study had the option to enroll in a prospective, longitudinal survey arm of the study, providing 9 follow-up surveys to the study team over a 3-year period. To be eligible to enroll in the survey arm of the study, women needed to meet the following criteria: 1) to be between ages 18 and 45 years; 2) to be fluent in English or Spanish; 3) to desire to prevent pregnancy for at least 1 year; 4) to

[a]We use the term “women” and participants interchangeably throughout this article but acknowledge that not all individuals who are in need of contraceptive services (or who were served by this initiative) identify as women. Transgender men and gender-nonconforming individuals were eligible for all aspects of participation.

have a functioning mobile phone; and 5) to have an income under 300% Federal Poverty level (FPL). The University of Utah's Institutional Review Board approved the study.

Data collection

All data for this study are participant-reported survey data from the intervention periods. Data collection occurred through a secure Web-based research electronic data capture (REDCap).[15] We considered participant method selected at enrollment to be the "initial method." In circumstances in which participants received more than 1 method (n = 11) (eg, an intrauterine device and condoms), we identified the method with the highest efficacy as the primary method at enrollment. We excluded participants who initially selected to receive emergency contraception (n = 22), the contraceptive patch (n = 3), "nothing" (n = 32), or "other" methods (nonspecified) (n = 2) from these analyses, because of the small sample sizes and an inability to aggregate them with another method category. For the purposes of this study, we aggregated nonhormonal behavioral methods (ie, male/female condoms, withdrawal, diaphragms, cervical caps, and fertility awareness–based methods) into a single category, because of their low initiation numbers at study outset. Data on pregnancy intention and feelings regarding a potential pregnancy were obtained using the PATH questions, which assess *P*regnancy *A*ttitudes, *T*iming, and *H*ow important is prevention.[16,17]

At each follow-up event (1-, 3-, and 6-month surveys), participants indicated which method(s) of contraception they had used in the past 4 weeks. For the purposes of this study, we classified participants as having switched methods if they reported in the 1-, 3-, or 6-month survey that they 1) had used a contraceptive method in the past 4 weeks that differed from their initial method, and also 2) did not report using their initial method in the past 4 weeks or reported that they had stopped using their initial method. We classified participants as having discontinued their method if, in their 1-, 3-, or 6-month survey, they reported either: 1) no contraceptive method use during the past 4 weeks, or 2) that they had stopped using their initial method during that time period without uptake of a subsequent method.

In circumstances in which survey data lacked clarity (eg, a participant reported use of an intrauterine device and an implant during the same period), we used electronic medical record data as a cross-check. We considered participants who reported ever switching at any point in the 6-month period as "switchers," and considered participants who reported ever discontinuing, without starting a new method, during that timeframe as "discontinuers," without the possibility to be double-counted in subsequent follow-up surveys. Participants who reported at enrollment that they were using a contraceptive method while waiting for an insertion appointment for a long-acting reversible method were not considered as switchers when they subsequently reported use of the long-acting method at follow-up.

We prompted participants who self-reported switching or discontinuing to provide reasons for the change. We aggregated reasons into broad categories, including: 1) side effects (eg, bleeding, headaches); 2) method-related (eg, did not want to take a pill every day); 3) method failure (ie, pregnancy), 4) medically indicated method change (eg, expulsion or adverse event); 5) desire to be pregnant; 6) not at risk for pregnancy (eg, not currently having sex or not having sex with men); 7) troubleshooting and experimenting (eg, wanting

to try a different method); and 8) other (eg, partner complaint). We also qualitatively coded all open-text participant responses to fit into the categories above.

Statistical analyses

We conducted descriptive statistics to report sociodemographic characteristics of women who continued, switched, or discontinued method use by 6 months. We also conducted separate, multivariable Poisson regression analyses to assess predictors of both discontinuation and switching. To develop final multivariate models, we initially conducted unadjusted analyses assessing predictors for each model, including (in turn): age, race, ethnicity, parity, education status, insurance status, relationship status, pregnancy intentions, poverty status, clinic of care, history of contraceptive use, prior history of abortion, initial method, and perceptions of control over a future pregnancy. We included all variables with a *P* value of less than .25[18] in unadjusted analyses in the final models, and checked for multicollinearity by assessing variance inflation factors in variables included in the adjusted models. If participants who reported continuation in the initial follow-up surveys did not complete a 6-month survey, they were excluded from the analyses, as we could not determine whether or not they had continued their initial method at the 6-month follow-up.

Finally, we compared switching or discontinuation outcomes between women who reported reasons for stopping their initial method, using χ^2 analyses. Only participants who reported switching or discontinuing their initial contraceptive method were prompted to report side effects or method-related issues; hence, we cannot estimate the association of side effects and switching or discontinuation in the multivariable models assessing factors associated with this outcome. We used Stata version 15 (StataCorp, College Station, TX) for all analyses.

Results

We included 3688 women in the final analyses, and present descriptive information about the sociodemographic characteristics in Table 1. By the 6-month follow-up, 2583 women (70.0%) reported continuation of their baseline method, 367 (10%) reported at least 1 period of discontinuation, and 459 (12.4%) reported switching to a different method at some point in the previous 6 months. Of those who completed the initial baseline survey, 279 (7.6%) women who reported continuing throughout the prior surveys did not provide a 6-month follow-up survey. Thus, we cannot verify with certainty whether they continued their method or had a different outcome at the 6-month follow-up, and they were not included in multivariable analyses. As such, when assessing for predictors, 3409 women were included.

Factors associated with discontinuation and switching

Factors associated with contraceptive discontinuation are reported in Table 2. Factors associated with switching are reported in Table 3. Selecting a short-acting method at baseline was associated with both discontinuing (incidence rate ratio [IRR], 2.49; 95% confidence interval [CI], 1.97, 3.12) and switching (IRR, 2.29; 95% CI, 1.87, 2.80) methods by the 6-month follow-up. Additional factors associated with higher likelihood of discontinuation included women reporting any future plans to become pregnant (Table 2 for

full overview of pregnancy plan options), those who reported Hispanic ethnicity (IRR, 1.45; 95% CI, 1.12, 1.89) or nonwhite race (IRR, 1.48; 95% CI, 1.08, 2.02), and women who did not wish to disclose their feelings of control over a possible pregnancy (IRR, 2.22; 95% CI, 1.22, 4.02). Women with some education were less likely to report discontinuation (IRR, 0.73; 95% CI, 0.57, 0.94) with a nonsignificant but similar trend among women with a bachelor's degree or higher (IRR, 0.76; 95% CI, 0.53, 1.09).

Women were less likely to switch methods if they reported being on their parents' insurance (IRR, 0.74; 95% CI, 0.56, 0.99). In addition, women were less likely to switch methods if they reported having 2 or more children (IRR, 1.37; 95% CI, 1.08, 1.74), with a nonsignificant but similar trend for those who had 1 child (IRR, 1.19; 95% CI, 0.91, 1.57).

Method-switching patterns

The proportion of women who switched methods varied by initial method (Table 4; summary results not presented in tabular form), with the lowest proportions of switching among women who initially selected LARC methods and higher proportions among women who selected short-acting methods. Among participants who switched methods, 36.9% switched to a LARC method (either from a prior LARC method or from another method). The remaining two-thirds were evenly divided into those switching to a short-acting, hormonal method (including pills, injectables, and vaginal ring; 31.7%) and those who reported switching to a nonhormonal behavioral method (such as use of condoms or withdrawal; 31.1%).

Reported reasons for discontinuation or switching

A total of 620 participants (54.6% switching, 45.4% discontinuation) reported at least 1 specific reason for deciding to switch or to discontinue their initial method (Table 5; summary results not presented in tabular form). Of participants providing a reason for stopping, 454 (73.2%) women reported side effects as 1 reason for switching or discontinuing their initial method. Women who selected short-acting methods reported side effects more frequently than women who selected LARCs ($P < .001$). Of those reporting side effects, 67% of women reported 2 or more side effects (range, 2–10).

Women reporting a medically\indicated reason for stopping their method, those who desired pregnancy, and those who were no longer at risk for pregnancy more frequently discontinued their method. Individuals who reported side effects, including bleeding ($P = .006$), pain/cramping ($P = .008$), mood change ($P = .004$), and gastrointestinal issues ($P = .016$) were more likely to be switchers than discontinuers.

Comment

In this study, approximately 1 in 5 participants (22.4%) reported some form of early method change by the 6-month follow-up. Although our finding is lower than previously reported in US-based research[6] that found that 31% of women discontinued a method within 6 months of starting it, our outcomes mirror the concept that switching and discontinuation are regular outcomes of contraceptive use. Differences in the rates of method change between our study and previous studies may be explained by a variety of factors, including broad method

availability, increasing trends toward LARC uptake, quality of contraceptive counseling, and removal of cost and some access barriers.

Similar to other studies on discontinuation and switching, our study found significant differences between outcomes based on initial contraceptive method selection, with lower rates of method change among women who selected LARC methods.[1,2,6,19–22] In prior studies, authors have noted that LARC discontinuation differs from short-acting method discontinuation in that it must be "active" (ie, making an appointment and meeting with a provider), compared to the "passive" discontinuation (ie, ceasing to take a pill, or not getting a prescription refilled) of most short-acting methods.[22]

Any future plans to become pregnant were associated with increased likelihood of discontinuation, even if a pregnancy was not desired for many years. Research into pregnancy intentions continues to find that future plans factor into method-related decisions.[17] Contraceptive counseling strategies that use timing-based questions may serve as important touch-points for method-related discussions around return to fertility, desire for method change, and back-up method options. Interestingly, women who already had children were more likely to switch methods than those who did not. This may be a different side of the same phenomenon: that is, women who have children may be more likely to have met their reproductive goals and thus may be more motivated to continue searching for a method that works for them.

Our study found an association between race/ethnicity and increased contraceptive discontinuation. Prior studies have documented the additional contraceptive barriers faced by women of color, as well as differences and disparities in contraceptive use.[23–25] Our findings suggest that these differences are also apparent in method change, underscoring the importance of future qualitative work to further assess how to better support women of color in method use.

Women using their parents' insurance plans less frequently reported method switching. Previous research has shown that fear of discovery of clinic visits principally drives nonuse of health insurance when paying for contraception in Title X clinics.[26] Young women on their parents' insurance may receive primary care elsewhere but rely on Title X clinics to receive their contraception, thus becoming less likely to switch methods, as these clinics and providers are not their primary source of health care.

As noted in prior studies, method-related issues, such as side effects, continue to play a major role in reported decisions to switch or to discontinue a method.[1–6] Our findings showed that participants in our study appeared to more frequently address side effects such as bleeding, pain/cramping, mood changes, or gastrointestinal issues by switching, rather than discontinuing, contraception. Women in our study also more frequently reported method attributes (such as having to remember to take a pill every day) as a reason that they decided to switch, rather than discontinue, contraception.

Our findings provide strong support for expanded method choice in clinical settings. Approximately 37% (n = 170) of switchers in the current study chose to switch to a LARC method. Of those, 40% (n = 68) had previously used a different LARC method at baseline.

Funding considerations, particularly at public clinics, can often limit the availability of subtypes of contraceptive methods. For example, a clinic may purchase and stock only 1 LARC option, or 3 oral contraceptive options at different dosages. Yet, providing a greater variety of options, with different delivery mechanisms, hormonal dosages, or attributes may be of particular importance to women experiencing side effects who still wish to prevent pregnancy.

Expanded method choice may also involve better counseling and education around nonhormonal behavioral methods, such as condoms or withdrawal. Among women who switched, 31.1% switched to a nonhormonal behavioral method. Such methods may represent important bridge methods while women assess alternative method options. Future research in this study population will assess the proportion of participants switching to nonhormonal behavioral methods who continue to use these methods over time.

Strengths of this study include the use of a large, prospective sample of women who specifically and regularly reported information relating to switching and discontinuation. The study location in both Title X clinics and an abortion clinic reflects an important and large group of contraceptive providers nationwide. This study also has a number of limitations. First, our follow-up surveys do not ask about side effects experienced among all users; thus, information around the role of side effects is limited to participants who did not continue their baseline method, and thus may reflect selection bias. In addition, our ability to cross-check participant survey data using electronic health records may skew our confidence in data reporting on provider-based methods, such as LARCs, which are more likely to have documentation around switching or discontinuation. Removing cost of uptake and method switching is both strength, in that it eliminated this as factor in decision making, and a weakness, in that it may affect the generalizability of our findings. Other findings from studies that do not remove cost barriers may have different outcomes from ours.

These results underscore the vital importance of expanded method availability, provider support, and the continued development of new methods of contraception, particularly for effective nonhormonal methods, to support women experiencing side effects from hormonal contraception. Switching and discontinuation are regular, frequent outcomes of contraceptive use that should be factored into clinical and public health considerations of contraceptive care.

Acknowledgments

Foremost, we would like to acknowledge and thank all participants in the HER Salt Lake Contraceptive Initiative for their generous provision of time and effort, which makes this and other ongoing HER research possible. We acknowledge the exceptional work done by our research team (Jasmin Alcantara, Eduardo Galindo, Amy Orr, and Corinne Sexsmith), our administrative support from the University of Utah Obstetrics and Gynecology Network; research and statistical consultations from Greg Stoddard from the University's Biostatistics Core; and the incredible clinical and research partnership with the Planned Parenthood Association in supporting this study. We are grateful for the community support for HER Salt Lake from the Willard L. Eccles Foundation, the Intermountain Community Care Foundation, private contributions, and our community advisory board (led by Annette Cumming and Kim Wirthlin).

This content is solely the responsibility of the authors and does not necessarily represent the official view of any of the funding agencies or participating institutions, including the National Institutes of Health, the University of Utah, and the Planned Parenthood Federation of America, Inc.

This project is funded by the Society of Family Planning Research Fund, the William and Flora Hewlett Foundation, and an anonymous foundation. The following companies contributed contraceptive products for the project: Bayer Women's Healthcare, Merck & Co. Inc., and Teva Pharmaceuticals. Use of REDCap was provided by the Eunice Kennedy Shriver National Institute of Child Health and Development (grant 8UL1TR000105 [formerly UL1RR025764] National Center for Advancing Translational Sciences/National Institutes of Health [NIH]). Team members receive support from the Eunice Kennedy Shriver National Institute of Child Health & Human Development and the Office of Research on Women's Health of the NIH (awards K12HD085852 to J. N. S. and K24HD087436 to D. K. T.).

A portion of the information contained in this paper was presented at the 43rd Psychosocial Workshop, Denver, CO, April 25, 2018. The Psychosocial Workshop is sponsored by the Transnational Family Research Institute and Population Association of America.

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AJOG at a Glance

Why was this study conducted?

There is a paucity of data examining contraceptive method switching and discontinuation, particularly among women who change methods soon after initiation.

Key findings

Contraceptive change is common, even when participants have all reversible method options available at no cost at initiation. Most women reported side effects as 1 reason for switching or stopping their initial method. Attributes such as type of method selected (long- or short-acting), history of abortion, education, insurance status, and pregnancy uncertainty were associated with switching and discontinuation outcomes.

What does this add to what is known?

This study provides an overview of early method outcomes among a prospective, longitudinal cohort of women who were initially offered all reversible contraceptive methods at no cost.

TABLE 1

Sociodemographic characteristics of HER Salt Lake contraceptive initiative participants[a]

Variable	Continuers (n = 2583)	Switchers (n = 459)	Discontinuers (n = 367)
Age category, y			
18–19	505 (19.5%)	103 (22.4%)	67 (18.3%)
20–24	1049 (40.6%)	180 (39.2%)	152 (41.4%)
25–29	592 (22.9%)	113 (24.6%)	81 (22.1%)
30–34	265 (10.3%)	40 (8.7%)	38 (10.4%)
35+	172 (6.7%)	23 (5.0%)	29 (7.9%)
Education status			
High school or less	1010 (39.2%)	222 (48.5%)	196 (53.4%)
Associates, vocational/tech school	1089 (42.3%)	172 (37.6%)	119 (32.4%)
Bachelors or higher	454 (17.6%)	61 (13.3%)	50 (13.6%)
Other	24 (0.9%)	3 (0.7%)	2 (0.5%)
Insurance status			
None	1144 (44.8%)	256 (56.0%)	196 (54.3%)
Public	97 (3.8%)	21 (4.6%)	22 (6.1%)
Private	540 (21.2%)	80 (17.5%)	67 (18.6%)
Parents’	614 (24.1%)	77 (16.8%)	57 (15.8%)
Other	156 (6.1%)	23 (5.0%)	19 (5.3%)
Poverty			
≤100% Federal Poverty Level[b]	1078 (44.4%)	226 (51.9%)	162 (48.1%)
101–300% Federal Poverty Level	1347 (55.5%)	209 (48.1%)	175 (51.9%)
Race/ethnicity			
American Indian/Alaska Native	40 (1.6%)	9 (2.0%)	10 (2.7%)
Asian	91 (3.5%)	12 (2.65%)	14 (3.8%)
Black	31 (1.2%)	15 (3.3%)	10 (2.7%)
Hispanic/Latina	497 (19.4%)	111 (24.5%)	116 (31.7%)
Pacific Islander	23 (0.9%)	2 (0.4%)	11 (3.01%)

Variable	Continuers (n = 2583)	Switchers (n = 459)	Discontinuers (n = 367)
White, non-Hispanic	1704 (66.5%)	258 (56.9%)	175 (47.8%)
Other	176 (6.9%)	46 (10.1%)	31 (8.5%)
Sexual orientation			
Bisexual	297 (11.7%)	49 (10.9%)	41 (11.7%)
Heterosexual	1799 (71.2%)	326 (72.3%)	268 (76.6%)
Mostly heterosexual	397 (15.7%)	72 (15.9%)	33 (9.4%)
Mostly or exclusively gay/lesbian	13 (0.5%)	NA	5 (1.4%)
Other	21 (0.8%)	4 (0.9%)	3 (0.9%)
Religion			
None	499 (61%)	65 (56.0%)	40 (42.1%)
Christian	85 (10.4%)	13 (11.2%)	14 (14.7%)
Catholic	74 (9.0%)	6 (5.2%)	13 (13.7%)
Mormon	89 (10.9%)	18 (15.5%)	13 (13.7%)
Prefer not to answer	34 (4.2%)	8 (6.9%)	6 (6.3%)
Other	37 (4.5%)	6 (5.2%)	9 (9.5%)
Feels control over becoming pregnant			
Strongly agree	1356 (53.7%)	256 (56.1%)	179 (51.6%)
Somewhat agree	815 (32.3%)	126 (27.6%)	100 (28.8%)
Neither agree nor disagree	133 (5.3%)	32 (7.0%)	29 (8.4%)
Somewhat disagree	110 (4.4%)	14 (3.1%)	15 (4.3%)
Strongly disagree	78 (3.1%)	20 (4.4%)	10 (2.9%)
Prefer not to answer	32 (1.3%)	8 (1.7%)	14 (4.0%)
Relationship status			
Married	277 (10.9%)	56 (12.2%)	51 (13.9%)
Cohabiting/committed	1220 (48.4%)	212 (46.3%)	157 (42.8%)
Actively dating	496 (19.7%)	89 (19.4%)	58 (15.8%)
Divorced/separated	87 (3.4%)	18 (3.9%)	16 (4.4%)
Single	367 (14.6%)	62 (13.5%)	65 (17.7%)
Widowed	3 (0.1%)	NA	3 (0.8%)

Variable	Continuers (n = 2583)	Switchers (n = 459)	Discontinuers (n = 367)
Other	56 (2.2%)	15 (3.3%)	11 (3.0%)
Prefer not to answer	15 (0.6%)	6 (1.3%)	6 (1.6%)
Relationship length			
<3 mo	532 (27.1%)	97 (27.2%)	84 (31.8%)
3–6 mo	282 (14.9%)	63 (17.6%)	40 (15.1%)
6–12 mo	269 (13.7%)	56 (15.7%)	28 (10.6%)
1–2 y	274 (13.9%)	53 (14.8%)	26 (9.8%)
2–3 y	203 (10.3%)	33 (9.2%)	26 (9.8%)
3+ y	394 (20.1%)	55 (15.4%)	60 (22.7%)
Parity			
0	1572 (60.9%)	248 (54.0%)	192 (52.3%)
1	375 (14.5%)	75 (16.3%)	66 (17.9%)
2+	636 (24.6%)	136 (29.6%)	109 (29.7%)
Pregnancy plans			
Within 12 mo	8 (0.3%)	7 (1.5%)	10 (2.7%)
Within 2–5 y	567 (22.0%)	132 (28.8%)	108 (29.7%)
Within 5–10 y	765 (29.7%)	126 (27.5%)	103 (28.3%)
Never	704 (27.4%)	113 (24.7%)	79 (21.7%)
Uncertain	520 (20.2%)	75 (16.4%)	63 (17.3%)
Other	8 (0.3%)	5 (1.1%)	1 (0.3%)
Ever had an abortion?			
No	2078 (82.0%)	374 (83.3%)	310 (85.9%)
Yes	455 (17.9%)	75 (16.7%)	51 (14.1%)
Ever used contraception before?			
No	140 (4.9%)	16 (3.5%)	30 (8.2%)
Yes	2738 (95.1%)	443 (96.5%)	337 (91.8%)
Method selected at baseline[b]			
CIUD	390 (15.1%)	57 (12.4%)	25 (6.8%)
LNG-IUD	790 (30.6%)	75 (16.3%)	53 (14.4%)

Variable	Continuers (n = 2583)	Switchers (n = 459)	Discontinuers (n = 367)
Implant	618 (21.7%)	64 (13.9%)	66 (17.9%)
Injectable	234 (9.0%)	58 (12.6%)	63 (17.1%)
Oral contraceptive	440 (17.0%)	163 (35.5%)	135 (36.8%%)
Vaginal ring	106 (4.1%)	30 (6.5%)	24 (6.5%)
Nonhormonal behavioral method	5 (0.02%)	12 (2.6%)	1 (0.02%)
Clinic			
Non–Title X Clinic	369 (14.3%)	54 (11.7%)	47 (12.8%)
Title X Clinic A	865 (33.5%)	154 (33.6%)	105 (28.6%)
Title X Clinic B	782 (30.3%)	157 (34.2%)	149 (40.6%)
Title X Clinic C	567 (21.9%)	94 (20.5%)	66 (18%)

Nonhormonal behavioral methods include male/female condoms, withdrawal, spermicides, fertility awareness–based methods, cervical caps, and diaphragms.

CIUD, copper intrauterine device; *HER*, Highly Effective Reversible Contraceptive Initiative; *LNG-IUD*, levonorgestrel intrauterine device; *NA*, not applicable/none.

[a]Data collected for this table were collected at baseline; not all participants completed responses to each of the baseline survey questions. Thus, numbers may not reflect the full sample size in all of the variables;

[b]Women participating in the HER Salt Lake study were offered all reversible contraceptive methods at no cost. Baseline refers to the initial method(s) selected at the initial HER visit.

TABLE 2

Multivariable Poisson regression models assessing predictors of contraceptive discontinuation by 6 months in the HER Salt Lake Contraceptive Initiative

Variable	Unadjusted analyses IRR (95% CI)	Adjusted model IRR (95% CI) (n = 3220)
Age, y		
18–19	Ref	Ref
20–24	1.08 (0.81, 1.44)	1.32 (0.97, 1.80)
25–29	1.01 (0.73, 1.40)	1.26 (0.86, 1.84)
30–34	1.09 (0.73, 1.62)	1.60 (1.00, 2.55)
35+	1.25 (0.81, 1.94)	1.74 (1.00, 3.03)
Race/ethnicity		
Hispanic	1.90 (1.52, 2.39)	1.45 (1.12, 1.89)
Non-Hispanic, nonwhite	1.62 (1.20, 2.19)	1.48 (1.08, 2.02)
White, non-Hispanic	Ref	Ref
Education		
High school/GED or less	Ref	Ref
Associates degree, vocational	0.67 (0.53, 0.84)	0.73 (0.57, 0.94)
Bachelor’s degree or higher	0.69 (0.50, 0.94)	0.76 (0.53, 1.09)
Insurance status[a]		
None	Ref	Ref
Public	1.22 (0.79, 1.90)	1.26 (0.57, 2.02)
Private	0.83 (0.63, 1.09)	0.98 (0.73, 1.32)
Parents	0.66 (0.49, 0.88)	0.86 (0.61, 1.19)
Other	0.79 (0.49, 1.26)	0.83 (0.50, 1.39)
Clinic attended		
Non–Title X Clinic	Ref	Ref
Title X Clinic A	1.01 (0.72, 1.40)	0.78 (0.52, 1.19)
Title X Clinic B	1.41 (1.03, 1.92)	0.86 (0.57, 1.28)
Title X Clinic C	0.97 (0.68, 1.39)	0.66 (0.42., 1.03)
Sexual orientation		

Am J Obstet Gynecol. Author manuscript; available in PMC 2020 April 01.

Variable	Unadjusted analyses IRR (95% CI)	Adjusted model IRR (95% CI) (n = 3220)
Heterosexual	Ref	Ref
Sexual minority[b]	0.80 (0.63, 1.01)	0.90 (0.70, 1.18)
Parity		
None	Ref	Ref
1+	1.25 (1.01, 1.53)	1.04 (0.82, 1.32)
History of abortion		
No	Ref	Ref
Yes	0.57 (0.41, 0.78)	0.74 (0.52, 1.07)
Previously used contraception		
No	Ref	Ref
Yes	0.59 (0.41, 0.86)	0.78 (0.51, 1.21)
Method selected at baseline		
Long-acting method	Ref	Ref
Short-acting method	2.45 (1.99, 3.03)	2.49 (1.97, 3.12)
Pregnancy plans		
Never	Ref	Ref
In the next 12 mo	3.83 (1.98, 7.40)	3.41 (1.71, 6.78)
2–5 y	1.48 (1.10, 1.98)	1.46 (1.06, 2.03)
5–10 y	1.19 (0.88, 1.59)	1.42 (1.01, 2.00)
Uncertain	1.10 (0.79, 1.53)	1.26 (0.87, 1.82)
Feels control over becoming pregnant		
Strongly agree	Ref	Ref
Somewhat agree	0.98 (0.77, 1.26)	1.07 (0.83, 1.38)
Neither agree nor disagree	1.48 (1.00, 2.20)	1.32 (0.88, 1.99)
Somewhat disagree	1.07 (0.63, 1.82)	1.07 (0.63, 1.81)
Strongly disagree	0.90 (0.47, 1.71)	0.77 (0.39, 1.52)
Prefer not to answer	2.14 (1.24, 3.69)	2.22 (1.22, 4.02)

CI, confidence interval; *GED,* graduate equivalency degree; *HER,* Highly Effective Reversible Contraceptive Initiative; *IRR,* incidence rate ratio; *Ref,* referent.

[a] Public insurance refers to Medicaid, Medicare, Veterans Affairs, or state-sponsored insurance plans. Private insurance refers to any reported insurance that is not publicly funded. Parental insurance refers to individuals who use health care through eligibility for coverage on their parents' insurance plans;

[b] Sexual minority includes women who identify as mostly heterosexual, bisexual, mostly or exclusively gay/lesbian, queer, transsexual, asexual, or self-identifying as something else.

TABLE 3

Multivariable Poisson regression models assessing predictors of contraceptive switching by 6 months in the HER Salt Lake Contraceptive Initiative

Variable	Univariate analyses IRR (95% CI)	Adjusted model IRR (95% CI) (n = 3107)
Age, y		
18–19	Ref	Ref
20–24	0.84 (0.66, 1.07)	0.87 (0.67, 1.13)
25–29	0.92 (0.71, 1.21)	0.94 (0.69, 1.30)
30–34	0.75 (0.52, 1.08)	0.69 (0.44, 1.07)
35+	0.66 (0.42, 1.05)	0.59 (0.35, 1.02)
Race/ethnicity		
Hispanic	1.35 (1.09, 1.66)	1.07 (0.84, 1.35)
Non-Hispanic, nonwhite	1.34 (1.03, 1.76)	1.24 (0.93, 1.64)
White, non-Hispanic	Ref	Ref
Education		
High school/GED or less	Ref	Ref
Associates degree, vocational	0.81 (0.67, 0.99)	0.91 (0.72, 1.13)
Bachelor’s degree or higher	0.71 (0.54, 0.94)	0.88 (0.63, 1.22)
Insurance status[a]		
None	Ref	Ref
Public	0.89 (0.59, 1.34)	1.00 (0.63, 1.59)
Private	0.75 (0.60, 0.96)	0.83 (0.63, 1.10)
Parents	0.68 (0.54, 0.87)	0.74 (0.56, 0.99)
Other	0.73 (0.49, 1.08)	0.73 (0.46, 1.15)
Poverty[b]		
<100% Federal Poverty Level	Ref	Ref
101–300% Federal Poverty Level	0.82 (0.68, 0.99)	0.94 (0.76, 1.15)
Clinic		
Non–Title X Clinic	Ref	Ref

Variable	Univariate analyses IRR (95% CI)	Adjusted model IRR (95% CI) (n = 3107)
Title X Clinic A	1.29 (0.96, 1.72)	1.07 (0.73, 1.55)
Title X Clinic B	1.34 (1.01, 1.80)	0.94 (0.65, 1.36)
Title X Clinic C	1.21 (0.88, 1.65)	0.93 (0.62, 1.38)
Parity		
None	Ref	Ref
1	1.15 (0.88, 1.48)	1.19 (0.91, 1.57)
2+	1.23 (0.99, 1.52)	1.37 (1.08, 1.74)
Previously used contraception		
No	Ref	Ref
Yes	1.36 (0.82, 2.23)	1.57 (0.91, 2.68)
Method selected at baseline		
Long-acting method	Ref	Ref
Short-acting method	2.41 (2.02, 2.85)	2.29 (1.87, 2.80)
Pregnancy plans		
Never	Ref	Ref
In the next 12 mo	2.51 (1.17, 5.40)	1.77 (0.80, 3.82)
2–5 y	1.32 (1.03, 1.70)	1.20 (0.91, 1.57)
5–10 y	1.03 (0.81, 1.33)	0.98 (0.74, 1.30)
Uncertain	0.93 (0.69, 1.23)	0.91 (0.66, 1.24)

CI, confidence interval; *GED*, graduate equivalency degree; *IRR*, incidence rate ratio; *Ref*, referent.

[a]Public insurance refers to Medicaid, Medicare, Veterans Affairs, or state-sponsored insurance plans. Private insurance refers to any reported insurance that is not publicly funded. Parental insurance refers to individuals who use health care through eligibility for coverage on their parents' insurance plans;

[b]Federal Poverty Level is determined each year. For 2018, individuals at <100% Federal Poverty Level must make $12,140 or less.

TABLE 4

Method uptake reported among 6-month contraceptive switchers in the HER Salt Lake Contraceptive Initiative

Baseline method	CIUD	LNG-IUD	Implant	Injectable	Oral contraceptive	Vaginal ring	Nonhormonal behavioral methods
CIUD (n[a] = 57)		13 (22.8%)	9 (15.8%)	2 (3.5%)	12 (21.0%)	7 (12.3%)	14 (24.6%)
LNG-IUD (n = 75)	18 (24%)		9 (12%)	7 (9.3%)	19 (25.3%)	6 (8%)	16 (21.3%)
Implant (n = 64)	6 (9.4%)	13 (20.3%)		9 (14.1%)	18 (28.1%)	3 (4.7%)	15 (23.4%)
Injectable (n = 58)	3 (5.2%)	5 (8.6%)	12 (20.7%)		19 (32.8%)	0 (0.0%)	19 (32.8%)
Oral contraceptive (n = 163)	15 (9.2%)	26 (15.9%)	23 (14.1%)	22 (13.5%)		10 (6.1%)	67 (41.1%)
Vaginal ring (n = 30)	2 (6.7%)	6 (20%)	4 (13.3%)	2 (6.7%)	4 (13.3%)		12 (40.0%)
Nonhormonal behavioral methods[b] (n = 12)	2 (16.7%)	2 (16.7%)	2 (16.7%)	1 (8.3%)	4 (33.3%)	1 (8.3%)	
Total (n = 459)	46 (10%)	65 (14.1%)	59 (12.8%)	43 (9.3%)	76 (16.5%)	27 (5.9%)	143 (31.1%)

CIUD, copper intrauterine device; *LNG-IUD*, levonorgestrel intrauterine device (includes Mirena, Liletta, Skyla).

[a]"n" Represents the total method selected by participants at baseline who later switched methods;

[b]Nonhormonal behavioral methods include male/female condoms, withdrawal, spermicides, fertility awareness–based methods, cervical caps, and diaphragms.

TABLE 5

Reported reasons for contraceptive switching and discontinuation in the HER Salt Lake contraceptive initiative

Variable	Switched (n = 459)[a]	Discontinued (n = 367)[a]	*P* value
Method attributes[b]	29 (6.3%)	12 (3.3%)	.053
Positive pregnancy test	80 (17.4%)	59 (16.1%)	.610
Medically indicated method change[c]	12 (2.6%)	28 (7.6%)	.001
Wanting pregnancy	12 (2.6%)	21 (5.7%)	.031
Not at risk for pregnancy[d]	4 (0.1%)	22 (5.9%)	<.001
Troubleshooting[e]	18 (3.9%)	9 (2.4%)	.325
Side effects (n = 454)	268 (58.4%)[i]	186 (50.6%)	.027
Bleeding	162 (35.3%)	97 (26.4%)	.006
Pain/cramping	129 (28.1%)	74 (20.2%)	.008
Breast symptoms	28 (6.1%)	22 (6%)	.950
Weight change	95 (20.7%)	66 (17.9%)	.328
Mood/depression	154 (33.6%)	89 (24.3%)	.004
Skin/hair	71 (15.5%)	50 (13.6%)	.456
Decreased libido	43 (9.4%)	23 (6.3%)	.103
Neurological[f]	3 (0.06%)	2 (0.05%)	NA
Gastrointestinal[g]	80 (17.4%)	42 (11.4%)	.016
Vaginal[h]	5 (1.1%)	1 (0.02%)	NA
Painful intercourse	22 (4.8%)	10 (2.7%)	.148
Cardiovascular[i]	4 (0.08%)	1 (0.02%)	NA
Other	7 (1.5%)	8 (2.1%)	NA
Other reason	9 (1.9%)	16 (4.3%)	.064
No reason reported	142 (30.9%)	107 (29.2%)	

NA, not available.

[a] Participants could report multiple reasons for switching or discontinuing, and could report multiple side effects within the side effect category. Thus, although the percentage totals for each variable in the respective columns reflect the proportion of total participants who reported a particular reason, these numbers will not add up to 100%;

[b] Method attributes include aspects of method use, such as taking a pill every day or needing to use a condom for each sex act;

[c] Medically indicated medical change includes intrauterine device perforations, expulsions, adverse events, and being told by a provider to discontinue use;

[d] "Not at risk for pregnancy" is defined as women not currently having vaginal–penile intercourse;

[e] "Troubleshooting" refers to women who simply wanted to try a different method of contraception, without citing side effects of their current method as a reason for change. "Not wanting to take a pill every day" or "I was curious" are example of troubleshooting;

[f] Neurological side effects include dizziness, headaches, migraines, etc;

[g] Gastrointestinal side effects include nausea, vomiting, bloating, etc;

[h] Vaginal side effects include yeast infections, urinary tract infections, other vaginal infections, etc;

[i] Cardiovascular side effects include reported stroke-like symptoms, irregular heartbeat, heart palpitations, heart racing, etc.