GYNECOLOGY

Cluster randomized trial of a patient-centered contraceptive decision support tool, *My Birth Control*

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BACKGROUND: Research suggests the need for improvement in the patient-centeredness and comprehensiveness of contraceptive counseling. *My Birth Control* is a tablet-based decision support tool designed to improve women's experience of contraceptive counseling and to help them select contraceptive methods that are consistent with their values and preferences.

OBJECTIVE: The objective of this study was to evaluate the effect of *My Birth Control* on contraceptive continuation, experience of contraceptive care, and decision quality.

STUDY DESIGN: Using a cluster randomized design, randomized at the provider level, patient participants interested in starting or changing contraception interacted with *My Birth Control* before their family planning visit (intervention) or received usual care (control). A postvisit survey assessed experience of care method satisfaction, decision quality, and contraceptive knowledge. Surveys at 4 and 7 months assessed the primary outcome of contraceptive continuation, along with method use, satisfaction, and unintended pregnancy. Mixed-effects logistic regression models with multiple imputation for missing data were used to examine the effect of treatment assignment.

RESULTS: Twenty-eight providers participated and 758 patients enrolled between December 5, 2014, and February 5, 2016. Participants were racially/ethnically diverse; less than a quarter self-identified as white. No effect was found on 7-month continuation (56.6% and 59.6% for intervention and control group respectively, odds ratio, 0.89; 95% confidence interval, 0.65—1.22). However, assignment to the intervention group increased reporting of the greatest Interpersonal Quality of Family Planning score (66.0% vs 57.4%, odds ratio, 1.45; 95% confidence interval, 1.03—2.05), the greatest scores on the informed decision and uncertainty subscales of the Decisional Conflict Scale (50.5% vs 43.2%, odds ratio, 1.34; 95% confidence interval, 1.0—1.80 and 41.6% vs 33.3%, odds ratio, 1.45; 95% confidence interval, 1.03—2.05), and greater knowledge.

CONCLUSION: *My Birth Control* had no effect on contraceptive continuation. The intervention did enhance the experience of contraceptive counseling and informed decision making, as well as contraceptive knowledge., The intervention's effect on patient experience is important, particularly given the personal nature of contraceptive decision making and the social and historical context of family planning care.

Key words: contraceptive continuation, contraceptive counseling, decision support tools, interpersonal quality of care, patient-centered care, shared decision making

Contraceptive counseling is a common experience for women of reproductive age, with more than 50% of sexually active women in the United States reporting receiving birth control—related care in the past 12 months.[1] The provision of patient-centered contraceptive counseling—defined as care that is respectful of, and responsive to, patient preferences, needs, and values—is necessary to provide quality family planning services,[2] especially given the uniquely personal nature of reproduction and sexuality.

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Previous research suggests the need for improvement in the patient-centeredness and comprehensiveness of contraceptive counseling.[3–6] Although women highly value comprehensive information and interactive support in the contraceptive decision making process,[7] they often are unable to discuss their concerns and do not receive sufficient information.[3,4,7–9] Recordings of counseling visits have found inconsistent elicitation or engagement with patient experiences and preferences by providers.[10] There has been little research on how to implement contraceptive counseling from a patient-centered perspective.[11–18]

Decision support tools are one means to enable patient-centered care and have been found to have a positive impact on knowledge, values-congruent choices, and risk perception.[19] Decision support tools for contraceptive decision making may help women identify their preferences and values and compare methods accordingly, and encourage providers to structure their decision support around these expressed preferences, while also standardizing the education provided. In this study, we sought to evaluate the impact of *My Birth Control*, an interactive decision support tool designed to be used on an iPad immediately before a visit with a healthcare provider, on contraceptive continuation, patient experience, and quality of decision making.

Materials and Methods

Study design

We conducted a cluster randomized controlled trial of *My Birth Control*, compared with usual contraceptive counseling, to determine the tool's impact on patients' contraceptive continuation and use, experience with counseling, decision quality, and knowledge of and attitudes towards

AJOG at a Glance

Why was the study conducted?

This cluster randomized trial was conducted to evaluate the effect of *My Birth Control*, a contraceptive decision support tool designed to facilitate patient-centered care and improve contraceptive decision making, on contraceptive continuation, experience of contraceptive care, decision quality, and knowledge.

Key findings

No effect was found on the primary outcome: 7-month continuation of a patient's chosen contraceptive method. However, patient assignment to a provider randomized to use the tool improved experience of care, increased report of informed decision making, and led to greater knowledge scores.

What does this add to what is known?

In conclusion, *My Birth Control* is a patient-centered intervention that was not found to have an effect on contraceptive continuation but has the potential to enhance patient experience of contraceptive counseling and decision making.

specific methods. We chose a cluster design to account for potential contamination between patients due to interaction with the printout causing providers to alter their counseling patterns. This study received approval from the University of California, San Francisco Institutional Review Board.

Participants and data collection

To ensure inclusion of low-income women and racially and ethnically diverse populations, we recruited providers and women at 4 different types of clinics serving these populations in the San Francisco Bay Area. Sites included a family planning clinic, a Department of Public Health clinic, a college student health center, and a hospital outpatient clinic.

Data collection occurred between 2014 and 2016. The unit of randomization was the provider, and randomization was stratified by clinical site. The inclusion criterion for providers was providing family planning counseling; this definition included licensed clinical providers and health educators. Study staff randomized providers to intervention or control arms with a 1:1 allocation ratio using a random number generator tool in Microsoft Excel (Microsoft, Redmond, WA).

The target patient population was women of reproductive age who planned to start or change a birth control method. Eligibility was assessed by research staff using the following criteria: being aged 15–45 years, not being currently pregnant, wishing to discuss starting or switching a contraceptive method during their visit, not desiring pregnancy within the subsequent 7 months, speaking English or Spanish, seeing a participating study provider, and not having previously enrolled in the study or having interacted with *My Birth Control*. Post-enrollment exclusion criteria included being diagnosed with pregnancy on the day of recruitment.

Providers and patients completed written informed consent. Patients were recruited in waiting rooms and completed baseline surveys on previous contraceptive use and familiarity with specific methods. Depending on the arm to which their provider had been randomized, patients either interacted with the tool before the visit or received usual care. Postvisit surveys were conducted assessing contraceptive method choice, contraceptive knowledge and attitudes, experience with counseling, and patient demographics. Participants were contacted by phone, SMS, or e-mail at 4 and 7 months postvisit to complete follow-up surveys assessing contraceptive use, satisfaction with their methods, and pregnancy. The length of follow-up was chosen based on the length of effectiveness of the contraceptive injection, Depo-Provera (Pfizer, New York, NY), which is 15 weeks. All follow-up data collection was blinded to study arm. Providers completed a one-time demographic survey.

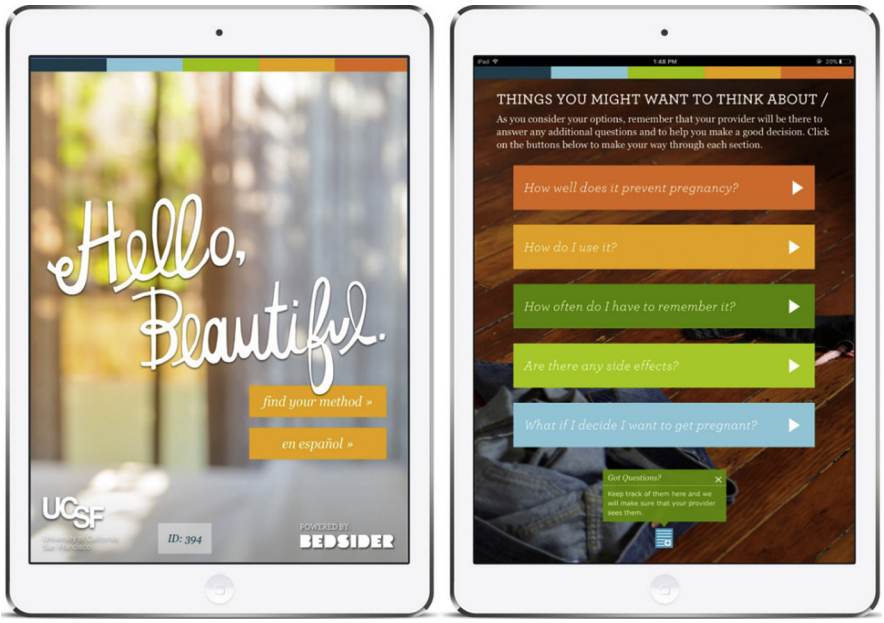
Intervention

My Birth Control consists of interactive educational modules, followed by a survey eliciting preferences for method characteristics. (The tool, which is formatted to be used on a tablet, can be accessed at https://clinic.mybirthcontrol.org). A patient's answers are used to generate recommendations for methods that match their preferences. A printout summarizing patient preferences and questions is generated to be shared with the provider to prompt individualized counseling (Figure 1). The goal of *My Birth Control* is to improve women's experience of contraceptive counseling and help them select contraceptive methods consistent with their values and preferences using patient-centered principles. The intervention was developed based on previous research about women's preferences and experiences of contraceptive counseling.[7,20] The process of development included extensive patient stakeholder involvement, and the intervention was found in pilot testing to be highly acceptable to patients.[21] Providers in the intervention arm received a 5- to 10-minute orientation to the tool. Their patients then interacted with the tool and they received the printouts. Providers in the control arm provided usual care.

Measures

The primary outcome was a binary indicator of contraceptive continuation at 7 months, defined by whether the participant had started to use their selected method and continued to use it without a gap of more than 4 consecutive weeks.[22] We chose the follow-up timeframe to account for the 15-week period of effectiveness of a contraceptive injection. We also examined contraceptive continuation at 4 months. We selected continuation as the primary outcome because we conceptualized the ability of a patient to identify a suitable method and continue to use it as an indicator of whether a patient's needs were met in the

FIGURE 1
***My Birth Control* introductory and menu pages**



This figure displays the *My Birth Control* introductory and menu pages.

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visit with a health care provider. We also examined continuous use of *any* moderately or highly effective method at 4 and 7 months.

We assessed patient experience with contraceptive counseling using the Interpersonal Quality of Family Planning scale, an 11-item patient-reported measure previously developed and validated by our team.[23,24] Each item was rated on a 5-point Likert scale, and, consistent with how this scale was validated, we analyzed experience of counseling as a binary outcome of the highest possible Interpersonal Quality of Family Planning score of 55 vs less than 55.[24] We also assessed visit satisfaction by asking about satisfaction with information given about side effects and overall visit satisfaction (both using a 5-point Likert scale).

We measured decision quality using the 16-item Decisional Conflict Scale (DCS)[25] and report on subscale scores as well as the overall scale, analyzed dichotomously as the greatest possible score of 100 vs less than 100. We asked patients how satisfied they were with how the provider helped with the choice of birth control method (5-point Likert). To gauge patient report of the provider's role in decision making, we measured who they felt made the decision (patient/provider/both). We asked about satisfaction with method chosen at baseline and satisfaction with current main method of birth control at 7 months using a 5-point Likert scale.

To assess knowledge, we asked patients in the postvisit survey a series of questions related to contraceptive options and features derived from the National Survey of Reproductive and Contraceptive Knowledge.[26] We generated a composite intrauterine device (IUD) knowledge score to capture whether participants correctly answered all 5 questions about the IUD.

We measured choice of contraceptive method at baseline and dichotomized responses into whether participants chose a highly effective method (IUDs, implants, or sterilization) or not. At 4 and 7 months, we measured method use and dichotomized responses into (1) whether participants were using a highly effective method vs other or no methods, and (2) whether they were using either a highly or a moderately effective method vs other or no methods. Attitudes toward long-acting reversible contraception were assessed postvisit by asking women, "Overall, how would you rate each of the following as a birth control method for yourself (even if you've never used it)" (11-point scale).[27] Incidence of unplanned pregnancy at 4 and 7 months was measured using the London Measure of Unplanned Pregnancy, a validated measure for understanding the level of preparation and intendedness before pregnancy.[28]

Sample size

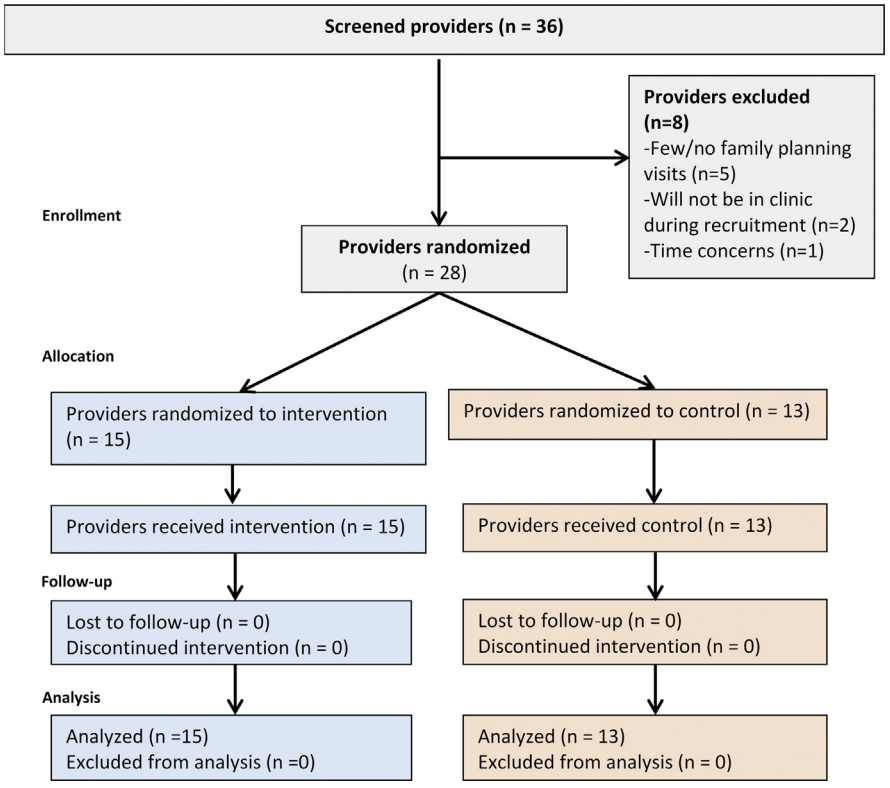
Sample size was calculated based on the primary outcome, contraceptive continuation at 7 months, and estimates of the intracluster correlations of this outcome by provider and by clinic were ~0 and 0.021, respectively, based on previous studies. Accounting for clustering and 20% loss to follow-up, a sample of 758 patients would provide 80% power in 2-sided tests with a type-I error rate of 5% to detect a 12-percentage point increase in continuation. This sample size would also provide 80% power to detect small-to-moderate but clinically significant differences in secondary outcomes.

Analysis

We conducted an intention-to-treat analysis in which all participants were included in their provider's assigned arm. Participants who found out they were pregnant during their enrollment visit, and thus were ineligible, were excluded (n=8), and those with multiple enrollments were only included for their first enrollment (n=1). Missing values were imputed using 20-fold multiple imputation, based on iterative chained equations.[29] Summary effect estimates, averaged over the 20 imputed datasets, as well as confidence intervals (CIs) and *P* values, were calculated using standard methods that account for imputation error.

Mixed effects models with random effects for provider and fixed effects for site and treatment assignment were run for all binary and continuous patient outcome variables; ordinal and nominal outcomes were analyzed using

FIGURE 2
CONSORT diagram for providers



This figure displays the CONSORT diagram for provider participants.

CONSORT, Consolidated Standards of Reporting Trials.

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generalized estimating equations (GEE) proportional odds and multinomial logistic models, respectively, due to limitations in Stata software for multiply-imputed outcomes. Outcomes measured using Likert scales, as well as the DCS subscales and overall scale, were dichotomized as the best result as compared with all others. A *P* value of .05 was considered statistically significant. We performed a sensitivity analysis on ordinal variables to examine mixed effects models on nonimputed data to determine whether there was a difference compared with GEE models on imputed data. In GEE models, clustering by provider was accounted for using robust standard errors.

Using a Bonferroni-corrected *P* of .01, we assessed modification of the effect of treatment assignment for outcome variables with evidence of a statistically significant overall effect, by 5 prespecified factors: age, race/ethnicity, language, parental education, and clinical site.

Results

Participant characteristics

In total, 28 providers and 758 patients enrolled the study (Figures 2 and 3). More than one half of the providers (57%) were licensed clinical providers, with the remainder being health educators or medical assistants (Table 1). Participants constituted a sociodemographically diverse group of study participants, and 18.3% opted to use the Spanish-language version of the decision support tool (Table 2).

Contraceptive continuation

There was no difference between the study arms in our primary outcome, with 56.6% and 59.6% in the intervention and control groups, respectively, reporting continuous use of chosen contraceptive method at 7 months (odds ratio [OR], 0.89; CI, 0.65−1.22) (Table 3). At 4 months, there was also no difference by arm in contraceptive continuation. At 4 and 7 months, there was also no difference by arm in continuation of any moderately or highly effective method.

Experience with counseling

A significantly greater percentage of participants in the intervention group reported the greatest level of interpersonal quality of counseling compared with the control group (66.0% vs 57.4%; OR, 1.45; CI, 1.03−2.05) (Table 3). More women in this group also reported complete satisfaction with information given about side effects (83.5% vs 75.7%; OR, 1.61; CI, 1.11−2.33). There was no difference in the percentage reporting complete satisfaction with the visit overall between intervention and control groups.

Decision quality

No difference between arms was found for the overall DCS. On the informed decision and uncertainty subscales of the decisional conflict scale, those in the intervention group reported lower decisional conflict than those in the control group (informed decision subscale: 50.5% vs 43.2%; OR, 1.34; CI, 1.00−1.80 / uncertainty subscale: 41.6% vs 33.3%; OR, 1.45; CI, 1.03−2.05) (Table 3). No differences emerged for the other decisional conflict subscales.

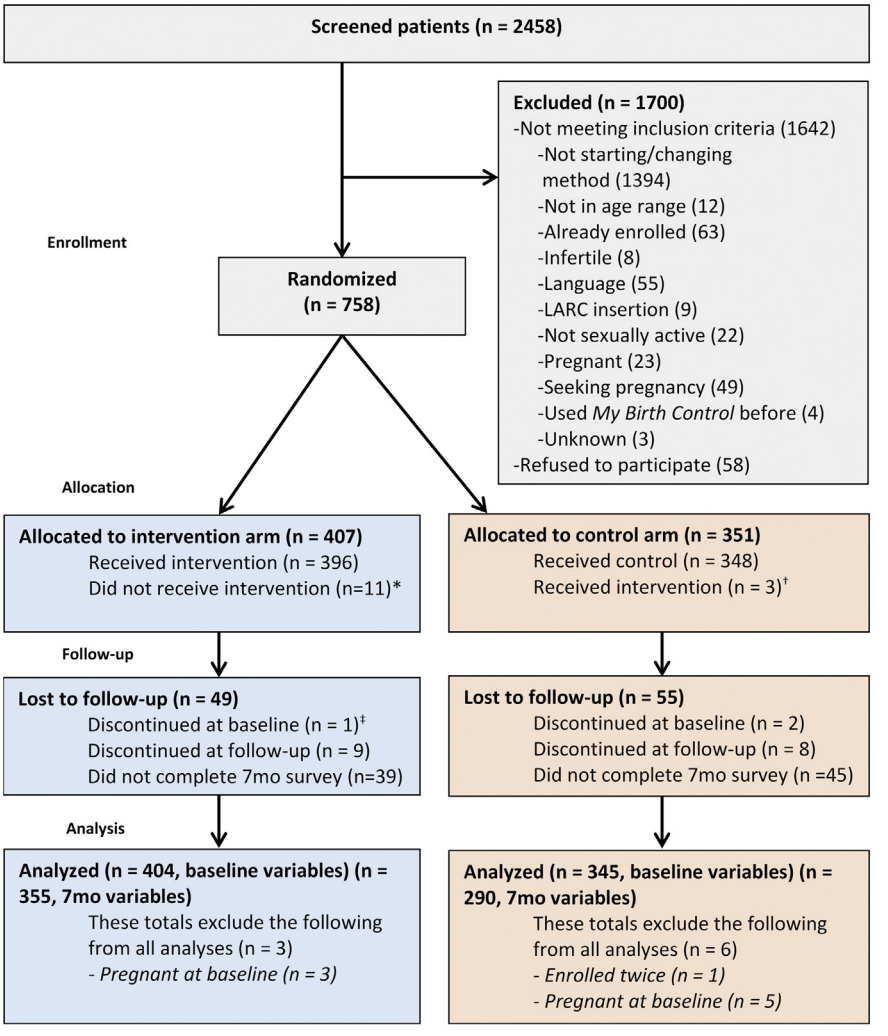
Experience of provider's role in decision making

There was no difference in overall satisfaction with how the provider helped with the choice of contraceptive method between intervention and control groups (76.9% vs 71.4%; OR, 1.30; CI, 0.93−1.82) and no difference in patient report of who made the decision about contraceptive method choice, with 72.6% in both groups reporting they alone made the decision (Table 3).

Satisfaction with contraceptive method

There were no significant differences in the percentage who reported high

FIGURE 3
CONSORT diagram for patients



*Patients who were randomized to the intervention, but did not receive the intervention, were contacted for normal follow-up procedures and analyzed as part of the intervention arm.
†Patients who were randomized to the control, but received the intervention, were contacted for normal follow-up procedures and analyzed as part of the control arm.
‡Patients who discontinued at baseline completed the pre-visit survey, were assigned to an arm, and then discontinued participation before completing all baseline procedures.

This figure displays the CONSORT diagram for patient participants.

CONSORT, Consolidated Standards of Reporting Trials.

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satisfaction with method selected at baseline between intervention and control groups (63.2% vs 59.2%; OR, 1.19; CI, 0.88−1.61) (Table 3). At 7 months, there was no difference in percentage reporting high satisfaction with their current main method of birth control between intervention and control groups (58.7% vs 61.0%; OR, 0.91; CI, 0.66−1.25).

Knowledge

The intervention group displayed greater levels of knowledge related to contraception after their counseling visit than the control group in terms of a number of different knowledge indicators (Table 4). A greater percentage in the intervention group were aware that IUDs are more effective than pills (70.8% vs 48.2%; OR, 2.65; CI, 1.94−3.62) and that the injection is more effective than condoms (60.4% vs 46.4%; OR, 1.77; CI, 1.29−2.44). A greater percentage in the intervention group also correctly stated that IUDs are an option for young nulliparous women (79.9% vs 67.9%; OR, 1.92; CI, 1.36−2.71) and that methods that cause periods to stop are safe (77.4% vs 65.5%; OR, 1.86; CI, 1.28−2.71). Significant differences did

TABLE 1
Provider participant characteristics by group[a]

Characteristics	Total n (%) (n=28)	Intervention n (%) (n=15)	Control n (%) (n=13)
Age, y			
<36	14 (50)	6 (40)	8 (62)
36–50	9 (32)	5 (33)	4 (31)
>50	5 (18)	4 (27)	1 (8)
Race or ethnicity			
White	17 (61)	8 (53)	9 (69)
Other	11 (39)	7 (47)	4 (31)
Professional degree			
Nurse practitioner, certified nurse midwife, or physician assistant	16 (57)	9 (60)	7 (54)
Other counselor or health educator	12 (43)	6 (40)	6 (46)

[a] Column percentages do not add up to 100 because of rounding.

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not emerge in the percentages correctly reporting that long-acting reversible contraception can be removed early between intervention and control groups (66.2% vs 62.8%; OR, 1.15; CI, 0.85–1.57). For the composite IUD knowledge variable, 36.1% of participants in the intervention group answered all questions correctly vs 19.1% in the control group (OR, 2.47; CI, 1.75–3.49).

With the exception of the pill and injection, the intervention group reported greater levels of knowledge related to methods' effect on fertility compared with the control group (Table 4).

Related to emergency contraception, significantly more participants in the intervention group compared with the control group knew that copper IUDs can act as emergency contraception (22.3% vs 9.9%; OR, 2.76; CI, 1.72–4.41) (Table 4).

TABLE 2
Patient participant characteristics by group[a]

Characteristics	Total % (n=749)	Intervention % (n=404)	Control % (n=345)
Age, y			
15–19	12.8	12.9	12.6
20–24	33.3	31.3	35.6
25–29	27.1	27.4	26.8
30–34	16.3	16.9	15.6
35–39	7.4	8.2	6.5
40–45	3.1	3.2	2.9
Race or ethnicity			
African American/black	10.8	11.4	10.0
Asian or Pacific Islander	16.3	14.6	18.2
Hispanic/Latina	38.8	39.9	37.4
White	23.0	21.3	25.0
Other	11.2	12.7	9.5

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Contraceptive choice, contraceptive use, and unintended pregnancy

There were no significant differences in choice of highly effective methods at baseline between intervention and control groups (38.1% vs 35.2%; OR, 1.06; CI, 0.69–1.65), or use of highly or moderately effective methods at both follow-up points (Table 5). The average ratings of methods for personal use were similar for all long-acting reversible methods between groups. There was also no significant difference in rates of unintended pregnancy between intervention and control groups.

Effect modification

We found no evidence for effect modification by prespecified covariates for outcomes with evidence of a statistically significant effect of treatment assignment (results not shown).

Comment

We did not observe an effect of *My Birth Control* on the primary outcome of contraceptive continuation or on outcomes related to method choice and unintended pregnancy. Our study did document a positive impact of this decision support tool on several patient-centered outcomes, including experience of contraceptive counseling, decision quality, and knowledge of contraceptive options.

Our initial choice of contraceptive continuation as the primary outcome was motivated by a desire to focus on an outcome with both patient-centered and public health implications. We conceptualized continuation as a patient-centered outcome because it indicated whether women were able to choose a method that was a good fit for them. As discontinuation is associated

TABLE 2
Patient participant characteristics by group[a] *(continued)*

Characteristics	Total % (n=749)	Intervention % (n=404)	Control % (n=345)
Language spoken during trial participation			
English	81.7	81.4	82.0
Spanish	18.3	18.6	18.0
Parental education			
8th grade or less	16.2	17.3	14.9
Some high school, but did not graduate	9.0	9.5	8.5
High school graduate or GED	20.3	20.2	20.4
Some college or 2-year degree	19.1	20.7	17.1
4-year college graduate or more	35.4	32.3	39.1
% FPL[b]			
<100	52.4	53.5	51.1
101–200	25.5	24.2	27.0
>200	22.1	22.3	21.9
Insurance status			
Insured for contraception	93.9	93.8	94.1
Not insured for contraception	6.1	6.2	5.9
Parity			
Nulliparous	67.9	66.6	69.4
Parous	32.1	33.4	30.6

GED, General Equivalency Diploma; *FPL*, Federal Poverty Level.

[a] Column percentages do not add up to 100 because of rounding; [b] Family income as a percentage of the 2014 FPL ($11,670 for a one-person household), taking into account number of household members.

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with gaps in contraceptive use,[30] this outcome also had relevance to the public health priority of preventing unintended pregnancy. This conceptualization of contraceptive continuation has recently been complicated, however, by research suggesting that women's preferences and needs regarding methods can change over time, related to issues such as changes in the need for contraception or experiencing unanticipated side effects.[31,32] This research highlights the fact that switching methods may therefore be a positive outcome, as it can reflect women's knowledge of and ability to access alternative methods that meet their evolving needs. Similarly, given the preference-sensitive nature of method choice, outcomes related to the effectiveness of the methods chosen are not inherently patient-centered.

Our findings therefore indicate that although implementation of *My Birth Control* may not have an impact on contraceptive and pregnancy outcomes of interest from a public health perspective, the outcomes on which we did find an effect support its potential to enhance patient-centered care, which is a core domain of quality healthcare.[33] Of note, a recent systematic review of patient preferences for contraceptive counseling found that women highly value comprehensive education about methods, with a particular emphasis on education about side effects.[34] The positive effects on knowledge and on satisfaction with counseling about side effects, in addition to overall patient experience, indicate that *My Birth Control* contributes to women receiving the care that they desire.

Providing patient-centered care consistent with women's preferences is of particular consequence in the area of reproductive health, due to the history of coercion within family planning settings, including nonconsensual sterilization.[35] In addition, studies have indicated that women of color may be less likely to receive patient-centered care, including being more likely to be pressured to use contraception.[4] As a result, improving women's experience of family planning care, and their ability to make informed, autonomous contraceptive decisions, is of the utmost value both overall and for the advancement of health equity. Further, these findings are novel, given the lack of focus on patient-centeredness as a goal in previous contraceptive counseling interventions.[36] We also note that, in addition to likely having contributed to the improved quality of decision making and patient experience observed in this trial, our strong findings regarding improved contraceptive knowledge has the potential to have an impact in the longer term on women's ability to make informed choices about their reproductive health.

Limitations of this study include the potential for contamination between arms if providers at the same clinic shared experiences with each other. We attempted to limit this through instructing providers randomized to the tool to not discuss their experience with colleagues. If this did occur, it would be a bias toward the null. In addition, patients and providers were not blinded to treatment assignment, although follow-up data collection was blinded. Because we randomized provider-level clusters, there may be systematic, unobserved differences in patient characteristics by study group.

TABLE 3
Continuation of chosen method and patient experience, satisfaction, and decision making, by group

Outcome	Intervention % n=404	Control % n=345	MI OR or RRR 95% CI	*P* value[a]
Continuous use of chosen contraceptive method (primary outcome)				
7 mo after enrollment	56.6	59.6	OR, 0.89 0.65–1.22	.46
4 mo after enrollment	67.5	72.8	OR, 0.79 0.57–1.10	.16
Continuous use of any moderately or highly effective contraceptive method				
7 mo after enrollment	66.7	63.4	OR, 1.17 0.84–1.62	.35
4 mo after enrollment	74.9	74.7	OR, 1.03 0.73–1.46	.85
Experience and satisfaction with visit				
Interpersonal Quality of Family Planning Counseling scale (highest rating)	66.0	57.4	OR, 1.45 1.03–2.05	.03
Complete satisfaction with information given about side effects	83.5	75.7	OR, 1.61 1.11–2.33	.01
Complete satisfaction with visit overall	85.8	83.9	OR, 1.11 0.74–1.67	.62
Highest rating in Patient Decisional Conflict in Contraceptive Choice				
Informed decision subscale	50.5	43.2	OR, 1.34 1.00–1.80	.05
Uncertainty subscale	41.6	33.3	OR, 1.45 1.03–2.05	.03
Effective decision subscale	42.1	39.3	OR, 1.13 0.80–1.59	.50
Values clarity subscale	49.7	45.8	OR, 1.17 0.86–1.59	.31
Support subscale	52.5	51.1	OR, 1.06 0.76–1.49	.73
Overall score	25.4	22.6	OR, 1.18 0.80–1.74	.41
Patient experience of provider role in decision making				
Complete satisfaction with how provider helped with choice	76.9	71.4	OR, 1.30 0.93–1.82	.13
Who made the decision?[b]				
Both (reference)	22.3	24.7	–	–
Patient	72.6	72.6	RRR, 1.13 0.79–1.61	.50
Provider	5.1	2.7	RRR, 2.14 0.89–5.15	.09
Satisfaction with contraceptive method				
Method chosen at enrollment	63.2	59.2	OR, 1.19 0.88–1.61	.25
Method used 7 mo after enrollment	58.7	61.0	OR, 0.91 0.66–1.25	.55

CI, confidence interval; *MI*, multiply-imputed; *OR*, odds ratio; *RRR*, relative risk ratio.

[a] *P* values rounded to 2 decimal points, except where more provide clarifying information; [b] For nominal outcomes, we were unable to generate a random effects model using imputed data. Sensitivity analysis using random effects on non-imputed data revealed no significant change in findings.

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TABLE 4
Contraceptive knowledge by group

Outcome	Intervention % n=404	Control % n=345	MI OR 95% CI	*P* value[a]
Correct knowledge related to effectiveness				
Pills are more effective than condoms	55.8	50.6	1.27 0.94–1.72	.12
IUDs are more effective than pills	70.8	48.2	2.65 1.94–3.62	<.011
Injection is more effective than condoms	60.4	46.4	1.77 1.29–2.44	<.01
Correct knowledge that IUDs are an option for nulliparous young women	79.9	67.9	1.92 1.36–2.71	<.01
Correct knowledge that methods causing periods to stop are safe	77.4	65.5	1.86 1.28–2.71	<.01
Correct knowledge that long acting reversible contraception can be removed early	66.2	62.8	1.15 0.85–1.57	.36
Correct knowledge on all IUD questions	36.1	19.1	2.47 1.75–3.49	<.01
Correct knowledge related to EC				
Copper IUD can act as EC	22.3	9.9	2.76 1.72–4.41	<.01
After sex, there is something you can do to prevent pregnancy	94.2	95.2	0.77 0.36–1.63	.49
EC can prevent pregnancy after sex	91.5	93.4	0.73 0.39–1.34	.31
Correct knowledge related to effect on fertility, after method is no longer used				
Patch does not affect fertility	70.3	59.8	1.65 1.20–2.26	<.01
Ring does not affect fertility	68.5	57.1	1.70 1.23–2.35	<.01
Injection does affect fertility	25.1	25.6	0.94 0.62–1.43	.77
Hormonal IUD does not affect fertility	60.4	49.1	1.61 1.19–2.17	<.01
Non-hormonal IUD does not affect fertility	62.7	52.4	1.56 1.15–2.10	<.01
Implant does not affect fertility	59.1	48.8	1.54 1.14–2.07	<.01
Pill does not affect fertility	71.1	65.2	1.33 0.96–1.84	.08

CI, confidence interval; *EC*, emergency contraception; *IUD*, intrauterine device; *MI*, multiply-imputed; *OR*, odds ratio.

[a] *P* values rounded to 2 decimal points, except where more provide clarifying information.

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This possibility is limited due to the fact that randomization was stratified by clinic, and demographics of individual providers' patients within one clinic are likely similar. Provider counseling practices also may have differed at baseline. We minimized selection bias by ensuring patient and provider participants were not aware to which arm they would be assigned before participation, avoiding preferential enrollment by arm. Finally, ORs should not be interpreted as risk ratios because our outcomes were generally common in the sample.

Our testing of multiple outcomes and the fact that there was no difference in some patient-centered outcomes, and some were of borderline significance, indicates that further research

TABLE 5
Contraceptive use, interest in highly effective contraception, and unintended pregnancy, by group

Outcome	Intervention % n=404	Control % n=345	MI OR 95% CI	*P* value[a]
Choice of highly effective method at enrollment[b]	38.1	35.2	1.06 0.69–1.65	.78
Currently using highly effective method[b]				
4 mo after enrollment	27.7	28.4	0.94 0.66–1.35	.75
7 mo after enrollment	29.7	28.2	1.07 0.75–1.53	.71
Currently using moderately or highly effective method[b]				
4 mo after enrollment	73.7	75.2	0.94 0.66–1.34	.75
7 mo after enrollment	72.3	69.1	1.17 0.83–1.64	.37
Postvisit method rating, 11-point scale[c]	mean	mean		
Hormonal IUD	6.60	6.25	1.22 0.92–1.60	.16
Non-hormonal IUD	6.29	6.30	0.99 0.75–1.30	.92
Implant	5.78	6.06	0.85 0.67–1.07	.17
Pill	6.27	6.57	0.85 0.64–1.11	.23
Patch	5.23	5.40	0.92 0.69–1.22	.55
Ring	5.07	5.50	0.81 0.64–1.02	.07
Injection	5.04	5.36	0.86 0.65 1.12	.26
Condoms	6.35	6.88	0.71 0.54–0.92	.009
Withdrawal	2.79	2.99	0.97 0.76–1.25	.84
Female sterilization	4.41	5.60	0.59 0.42–0.82	.002
Male sterilization	4.97	6.09	0.58 0.40–0.85	.005
Unintended pregnancy				
7 mo after enrollment	6.7	3.8	1.83 0.88–3.80	.11
4 mo after enrollment	3.4	2.8	1.27 0.48–3.37	.63

CI, confidence interval; *IUD*, intrauterine device; *MI*, multiply-imputed; *OR*, odds ratio.

[a] *P* values rounded to 2 decimal points, except where more provide clarifying information; [b] As defined by the Centers for Disease Control and Prevention, moderately effective methods include injectables, pills, patch, vaginal ring, and diaphragm; typical failure rates range from 6% to 12%. Highly effective methods include implants, IUDs, and male and female sterilization; failure rates are <1%; [c] 11-point scale from 0=terrible to 10=great. Denominators differ because those who had never heard of a method were excluded. ORs estimated using the proportional odds model should be interpreted as measuring the effect of treatment on the odds of having a greater score. We were unable to generate a random effects model for this ordinal outcome using imputed data. Sensitivity analysis using random effects on nonimputed data revealed no significant change in findings. Non–long-acting reversible contraception methods are included for comparison sake.

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on and refinement of *My Birth Control* may be warranted. However, our findings related to interpersonal quality of care and decisional conflict are consistent with the intent of *My Birth Control* and our theory for how it impacts care, and we consider them robust.

In conclusion, *My Birth Control* is a patient-centered intervention that does not have an impact on contraceptive continuation but enhances patient experience of contraceptive counseling and decision making. Future research could determine how to further optimize this intervention, as well as how this tool can be combined with other interventions designed to enhance access to the full range of contraceptive methods to meet women's reproductive health needs. ■

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