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Evaluation of a computerized contraceptive decision aid: a randomized controlled trial

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Abstract

Objective: To evaluate the effectiveness of a contraceptive decision aid in reducing decisional conflict among women seeking reversible contraception.

Study Design: We conducted a randomized trial of a computer-based decision aid compared to a control group for women presenting for reversible contraception at two clinics affiliated with an academic medical center. The primary outcome was change in decisional conflict, measured before and after the healthcare visit using the validated Decisional Conflict Scale. We hypothesized the decision aid would reduce the decisional conflict score by 10 points on a 100-

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Conflicts of Interest

Dr. Madden serves on a data safety monitoring board for phase 4 safety studies of Bayer contraceptive products. Dr. Peipert receives research funding from Bayer Healthcare Pharmaceuticals, CooperSurgical/TEVA, and Merck & Co, Inc. and serves on an advisory board for CooperSurgical Pharmaceuticals. Dr. Politi receives research funding from Merck & Co. The other authors do not have any potential conflicts of interest to report.

point scale (0=no conflict, 100=high conflict) compared to the control group. Secondary outcomes included contraceptive method chosen and satisfaction with the healthcare visit.

Results: We enrolled and randomized 253 women, and 241 had complete data for our primary outcome. Overall, pre-visit decisional conflict scores were low, reflecting low levels of decisional conflict in our sample; median score 15 (range 0 to 80) in the decision aid and 10 (0 to 85) in the control group ($p=0.45$). Both groups had a similar reduction in median decisional conflict after the healthcare visit: -10 (-80 to 25) and -10 (-60 to 5) in the decision aid and control groups respectively ($p=0.99$). Choice of contraception ($p=0.23$) and satisfaction with healthcare provider ($p=0.79$) also did not differ by study group.

Conclusions: Decisional conflict around contraception was low in both groups at baseline. Use of a computerized contraceptive decision aid did not reduce decisional conflict, alter method choice, or impact satisfaction compared to the control group among women choosing reversible contraception.

Keywords

Contraception; decisional conflict; patient decision aid; contraceptive counseling

1. Introduction

Like many health care decisions, the choice of a contraceptive method is a preference-sensitive decision. Women have multiple, sometimes competing, preferences for contraceptive method characteristics including effectiveness, frequency of use, and side effects [1–4]. Method effectiveness is often cited as an important characteristic for the majority of women choosing contraception [1, 2]. However, the most effective reversible methods, intrauterine devices (IUD) and implants [5], are currently used by a minority (14.3%) of contraceptive women [6]. The lower rate of IUD and implant uptake may be due to less patient desire for these methods, or reflects a lack of concordance between patient preferences and contraceptive method selected. If present, this lack of concordance may be due to inadequate patient knowledge, lack of awareness, or unclear values. A previous randomized trial of a computer-based, contraceptive tool found that women assigned to the intervention were more likely to choose an effective method of contraception compared to the control group [7].

One way to assist women in choosing contraception is through a patient decision aid. Decision aids increase knowledge, clarify personal values, and improve the match between values and healthcare choices [8]. Women making contraceptive decisions also rate computerized decision aids to be both helpful and enjoyable [7, 9, 10]. In one study, women who received a personalized print-out were more likely to continue use of their contraceptive method at 4 months [9]. Therefore, integration of a decision aid into the contraceptive decision making process may be a feasible, effective way to improve alignment between contraceptive preferences and method, which in turn may improve contraceptive use, satisfaction, and continuation.

In this study, we developed a tablet-based contraceptive decision aid designed to elicit women's preferences for contraceptive characteristics and provide the top three reversible contraceptive recommendations that fit the woman's preferences. We randomized participants to the decision aid or a tablet-based survey with items about general reproductive health (control group) prior to their healthcare provider visit. Our hypothesis was that women using the contraceptive decision aid would report a greater reduction in decisional conflict compared to the control group. Our secondary outcomes were to compare contraceptive method chosen and satisfaction with the healthcare provider between the randomized groups.

2. Materials & Methods

2.1 Algorithm Development

We developed a tablet-based contraceptive decision aid designed to elicit individuals' preferences about reversible contraception and provide information about options that aligned with these preferences. The decision aid contained items about past medical and reproductive history, prior contraceptive use, reproductive plans, and contraceptive preferences. Participants in the decision aid group viewed a list of 17 possible contraceptive preferences based on previous research (Appendix A) [1–3] and ranked their three most important preferences. We developed an algorithm to identify the three contraceptive methods most concordant with the women's preferences. The algorithm assigned a score to each method based on the women's responses. Positive scores were assigned for the top three preferences and contraceptive methods without contraindications. Negative scores were assigned for prior discontinuation of a method due to side effects and medical contraindications as defined by the Centers for Disease Control and Prevention Medical Eligibility for Contraception [11]. The algorithm was developed and tested using cross-sectional data collected from a subset of a larger contraceptive cohort study [12, 13]. At the end of the decision aid, participants proceeded to a screen that showed their top three preferences and contraceptive suggestions based on those preferences. Each contraceptive method icon provided a brief description and a link ([bedsider.org](https://www.bedsider.org)) which gave more detailed information, including the advantages and disadvantages of each of the methods. Each participant also received printed, tailored information with their top three contraceptive preferences and three suggested contraceptive methods. The printed information also listed other appropriate contraceptive methods and any medically contraindicated contraceptive methods (Appendix B).

We performed a randomized controlled trial of the contraceptive decision aid compared to a control group. Participants randomized to the control group completed questions about demographic and reproductive characteristics on a tablet computer and received a non-tailored handout describing recommendations for reproductive health care such as screening for cervical cancer and sexually transmitted infections. This process ensured that interaction with the tablet and receipt of a handout did not impact findings [14]. Only participants in the decision aid group completed the preference questions.

2.2 Participants and Recruitment

We recruited women from two obstetrics and gynecology clinics affiliated with an academic medical center. Both clinics offered IUDs and implants, including same-day placement based on patient eligibility and insurance pre-authorization. Research assistants contacted potentially eligible women aged 18–45 years scheduled for routine gynecologic care or contraceptive management by telephone 1–3 days before their appointment, and screened for eligibility. Additional inclusion criteria for this study included: 1) at risk for unintended pregnancy (i.e. no prior tubal sterilization or hysterectomy); 2) planned to discuss reversible contraception at their scheduled appointment; 3) English speaking; and 4) willing to complete a post-visit survey after the appointment. Participants not screened by telephone were screened in person prior to their appointment. The Washington University School of Medicine Human Research Protection Office approved the study prior to participant recruitment.

2.3 Study Procedures

Following informed consent, we randomly assigned participants to the contraceptive decision aid or the control group. The computer programmer who was not involved in recruitment used a random number generator to create the randomization scheme. We randomized participants in a 2:1 ratio with twice as many participants in the decision aid group. Allocation was concealed from the research team as the tablet computer implemented the random allocation sequence. Due to the differences in the two printouts provided to the study groups, which participants were encouraged to share with their health care provider, blinding of the participants and healthcare providers was not possible.

Participants completed the contraceptive decision aid or the general reproductive health survey prior to their scheduled appointment. After the appointment, they completed a self-administered post-visit survey via a tablet computer. This survey asked about chosen contraceptive method and use of the printout during the visit. Satisfaction with the counseling from the healthcare provider and visit overall was measured on a 5-point scale from 1 (“not satisfied”) to 5 (“very satisfied”). We also collected data about demographic characteristics and Internet use. We assessed health literacy and numeracy using validated items [15, 16].

2.4 Decisional Conflict

We measured decisional conflict prior to the healthcare provider visit, and again in the post-visit survey. Decisional conflict describes difficulty of making a choice with both advantages and disadvantages [17] and is frequently evaluated as an outcome in trials of decision aids [18–23]. We used the validated 10-item low-literacy Decisional Conflict Scale (DCS) [24] modified so that each question specifically referred to “birth control options.” Participants responded “yes,” “no,” or “unsure.” The 10-item version also includes subscales for uncertainty, informed decision, values clarity, and support. For the total and subscale scores, a numeric value between 0 and 100 was calculated based on the responses, with 0 indicating no decisional conflict and 100 indicating high decisional conflict.

The DCS is most often used to evaluate the impact of decision aids, and subsequently the decision chosen, preferences, and risk perception among other outcomes across a wide range of healthcare specialties [22, 23]. Although there were no prior published studies of DCS and contraceptive decision making, based on reductions in DCS from other studies [25–27] we hypothesized that women assigned to the contraceptive decision aid would have a 10-point greater reduction in the mean change in DCS compared to women assigned to the control group. Using a 2:1 randomization, an α of 0.05, β of 0.1, and a standard deviation of 20, we required 127 women in the intervention arm and 64 women in the control arm for a total sample size of 191 to observe the proposed difference. To account for possible loss to follow up, we planned to increase recruitment by 20% for a total of 230 women. This sample size would also provide 90% power to detect a two-fold increase in the choice of a highly effective reversible contraceptive method.

2.5 Statistical Analyses

We performed descriptive analyses comparing baseline characteristics of participants in each arm. We summarized continuous variables using means, standard deviations, medians, and ranges, as appropriate. Categorical variables were presented as frequencies. Normally distributed continuous variables were analyzed with Student's t-test. Chi-square and Fisher's exact tests were used to compare categorical variables. We assessed normality of decisional conflict score distribution which showed that pre-visit, post-visit, and change in decisional conflict scores were not normally distributed. Therefore, we present the medians and ranges for these values. We performed non-parametric testing to compare groups with the Mann-Whitney U test. Study data were collected and managed using REDCap electronic data capture tools hosted at Washington University [28, 29]. Statistical analyses were conducted using Stata 14 (StataCorp, College Station, TX) and significance was set at $p < 0.05$.

3. Results

3.1 Participant Characteristics

Between January and August 2014, we enrolled and randomized 253 women. Figure 1 shows the comprehensive breakdown of recruitment and study flow. There were 167 women randomized to the contraceptive decision aid and 86 women randomized to the control group. The tablet malfunctioned for two participants (1 decision aid, 1 control group) without saving any data. We compared demographic and reproductive statistics for the 251 participants with available data. Two participants in the control group did not complete the pre-visit DCS items and were not included in any DCS analyses. Eight participants (5 decision aid, 3 control group) did not complete the post-visit survey, resulting in 241 women included in the analysis of pre-post change in DCS scores, and contraceptive preferences, and method selection; 161 randomized to the contraceptive decision aid and 80 to the control group. There were no significant differences in demographic and reproductive characteristics or pre-visit DCS scores between the eight participants that did not complete the post-visit survey and the 241 women included in all analyses.

There were no differences in demographic and reproductive characteristics between the two groups (Table 1), except that women in the decision aid group were more likely to have had

a history of a prior unintended pregnancy, 68.8% vs. 49.0%, $p=0.02$. Seventy-seven (30.7%) women reported at least one medical condition that could influence contraceptive eligibility, most commonly a history of migraine headaches (19.1%) and hypertension (9.6%). A small number of women reported histories of abnormal vaginal bleeding (2.8%), gall bladder disease (1.2%), venous thromboembolism (0.8%), diabetes (0.8%), and liver disease (0.4%). Overall, participants reported high rates of internet use; health literacy, health numeracy and internet use did not differ between groups.

3.2 Decisional Conflict

The pre-visit decisional conflict scores were low in both groups. At baseline, the total decisional conflict score did not differ between the contraceptive decision aid and control groups: median (range) 15 (0 to 80) and 10 (0 to 85) respectively, ($p=0.45$). We calculated post-visit DCS scores and change in DCS scores for the 241 subjects with pre-visit and post-visit data available (Table 3). Both groups had a similar change in median decisional conflict: median -10 (-80 to 25) in the contraceptive decision aid group compared to -10 (-60 to 5) in the control group ($p=0.99$). The pre-visit, post-visit, and change in DCS subscale scores did not differ between groups. Participants were highly satisfied with the contraceptive counseling received from their healthcare provider, (mean score 4.6, SD 0.8) as well as their healthcare provider overall (mean score 4.8, SD 0.8). Neither of these differed by group ($p=0.91$ and $p=0.79$ respectively).

3.3 Contraceptive Method Selection and Preferences

Participants randomized to the decision aid identified the three contraceptive attributes most important to them. The most frequently identified preferences were “effectiveness at preventing unintended pregnancy” (78.2%), “avoids heavy or longer periods” (29.8%), “long-lasting” (28.0%), “has a low chance of side effects” (27.3%), and “does not cause irregular bleeding” (26.7%). Fifty-one percent of participants selected a new contraceptive method. This proportion did not differ between groups ($p=0.66$). Of the participants who chose a new method, 77% of women received their selected method on the day of enrollment; this proportion did not differ between groups ($p=0.63$). Table 3 shows the method chosen during the visit. Choice of methods was similar between the two groups ($p=0.23$). The choice of an IUD or implant did not differ between decision aid and control groups (39.2% vs 37.6%, $p=0.81$). Ninety-seven percent of women reported discussing contraception with their provider during the visit, which did not differ by study group ($p=0.79$).

In the decision aid group, 151 of 161 (93.8%) women chose a method concordant with at least one stated preference and 109 (67.7%) chose a top three method recommended by the algorithm. Among the 52 women who chose a method other than one of the top three algorithm recommendations, 22 (13.6%) chose a method consistent with one or two of their top preferences but not all three. There were 21 (13.0%) women who chose a method concordant with their preferences, but self-reported a medical contraindication ($n=16$) or prior discontinuation due to a side effect ($n=5$) with the chosen method. Five (3.1%) women chose a method not concordant with any stated preferences and 4 (2.5%) chose no method. There were 15 women in the decision aid arm whose decisional conflict increased (range of

change: 1–25) after their appointment, and these women were less likely to choose a method recommended by the algorithm (40.0%) compared to women whose decisional conflict was unchanged or lower post visit (70.5%) ($p=0.02$).

4. Discussion

In this randomized controlled trial, we found that use of a computerized contraceptive decision aid did not reduce decisional conflict among women seeking reversible contraception. Additionally, the contraceptive method chosen by the participant at the end of the visit did not differ between the two groups. Nearly 94% of women in the decision aid arm chose a contraceptive method consistent with at least one of their stated preferences.

Among our sample, baseline median decisional conflict scores were unexpectedly low in both groups. This may have contributed to the non-significant change in post-visit decisional conflict scores. The low decisional conflict among participants may have been a result of the inclusion criterion of planning to discuss contraception. Alternatively, it could reflect a high level of awareness about contraception among the study sample. Women who had a post-visit increase in decisional conflict scores were less likely to choose a preference-concordant contraceptive method. However, the number of women with an increase in decisional conflict was small overall. Contraceptive methods chosen by each group also did not differ between the two randomized groups. While we did not specifically design our decision aid to increase uptake of IUDs and implants, uptake in both groups was higher than the national average (39.2%).

The majority of women in the decision aid arm chose a contraceptive method consistent with at least one of their stated preferences. However, the algorithm only correctly predicted method choice for 68% of participants. It is possible that our algorithm, based on the three top preferences, desired method, prior contraceptive experience, and medical contraindications, did not align well with some women's contraceptive decision-making process. As a result, some women may have perceived the recommendations of the decision aid algorithm to be discordant with their preferences.

Our findings differ from a recently published study evaluating a tablet-based, contraceptive decision support tool [30]. In that study, participants who used the decision support tool had higher decision quality and contraceptive knowledge. In addition, participants in the intervention group reported lower decisional conflict on some subscales. In contrast, we did not see any difference in subscale scores in our study. In addition, reported decisional conflict was significantly higher in the newly published study, compared to ours. It is possible that the different format of the decision tools affected results. It is also possible that our patient populations and baseline knowledge and decisional conflict differed from each other, leading to different outcomes.

Strengths of our study include the randomized design and racial and socioeconomic diversity of the study sample. However, there are several limitations. We did not record data about contraceptive preferences among women in the control group, and thus cannot compare preference concordant choices between the two arms. While the list of preferences we

provided was substantial, women may have considered other preferences or may have individually weighted preferences differently than the algorithm. In addition, because randomization occurred at the individual patient level, it is possible that eliciting patient preferences and providing the printed handout led to contamination and altered healthcare provider behavior for the control group as well as the intervention group. Furthermore, we did not collect data about whether patients were new patients or existing patients. It is possible that established patients may have had prior discussions with their health care provider that may have impacted decisional conflict and method choice. Participants were recruited from a single academic medical center and had high self-reported health literacy and Internet use, which may decrease the generalizability of our findings.

In our population with low baseline decisional conflict regarding contraception, there was no difference in the reduction in decisional conflict among women using the contraceptive decision aid compared to the control group. There was also no difference in method choice or healthcare provider satisfaction. The contraceptive decision aid did support preference-concordant contraceptive choices in most women. Although we did not find a reduction in decisional conflict among women who used the contraceptive decision aid compared to the control group in this study, the contraceptive decision aid is a low intensity intervention. Future studies could focus on testing this decision aid or others like it in different clinical settings, especially where barriers to comprehensive contraceptive counseling exist.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Appendices

Appendix A:

Contraceptive preferences ranked by participants on a five-point scale from “not important” (1) to “very important” (5)

1. The method is highly effective at preventing pregnancy, meaning fewer than 3 in 100 women will get pregnant using the method for one year.
2. You have a regular period every month.
3. You avoid irregular or unpredictable bleeding or periods.

4. You avoid heavier or longer periods.
5. You only have to think about the method right before sex.
6. The method is forgettable. You do not have to think about it when having sex, or every day, every week, or every month.
7. Nobody knows you are using the method.
8. You avoid hormones.
9. There is a low chance of side effects such as nausea, breast tenderness, moodiness and headaches with this method.
10. There is a low chance of weight gain with the method.
11. You have protection against sexually transmitted infections.
12. You avoid an object inside your body.
13. You do not need an appointment with a healthcare provider to start or continue the method.
14. The method is recommended by your health care provider.
15. You have a friend or family member who is using the method and is happy with it.
16. You avoid an exam or procedure to insert the method.
17. The method is affordable.

Appendix B:

Example printout from contraceptive decision aid

References

- [1]. Madden T, Secura GM, Nease RF, Politi MC, Peipert JF. The role of contraceptive attributes in women's contraceptive decision making. *Am J Obstet Gynecol*. 2015;213:46 e1–6. [PubMed: 25644443]
- [2]. Donnelly KZ, Foster TC, Thompson R. What matters most? The content and concordance of patients' and providers' information priorities for contraceptive decision making. *Contraception*. 2014;90:280–7. [PubMed: 24863169]
- [3]. Lessard LN, Karasek D, Ma S, et al. Contraceptive features preferred by women at high risk of unintended pregnancy. *Perspect Sex Reprod Health*. 2012;44:194–200. [PubMed: 22958664]
- [4]. Gomez AM, Clark JB. The relationship between contraceptive features preferred by young women and interest in IUDs: an exploratory analysis. *Perspect Sex Reprod Health*. 2014;46:157–63. [PubMed: 25040577]
- [5]. Sundaram A, Vaughan B, Kost K, et al. Contraceptive Failure in the United States: Estimates from the 2006–2010 National Survey of Family Growth. *Perspect Sex Reprod Health*. 2017;49:7–16. [PubMed: 28245088]
- [6]. Kavanaugh ML, Jerman J. Contraceptive method use in the United States: trends and characteristics between 2008, 2012 and 2014. *Contraception*. 2018;97:14–21. [PubMed: 29038071]

- [7]. Garbers S, Meserve A, Kottke M, Hatcher R, Ventura A, Chiasson MA. Randomized controlled trial of a computer-based module to improve contraceptive method choice. *Contraception*. 2012;86:383–90. [PubMed: 22402258]
- [8]. Stacey D, Legare F, Lewis K, et al. Decision aids for people facing health treatment or screening decisions. *Cochrane Database Syst Rev*. 2017;4:CD001431. [PubMed: 28402085]
- [9]. Garbers S, Meserve A, Kottke M, Hatcher R, Chiasson MA. Tailored health messaging improves contraceptive continuation and adherence: results from a randomized controlled trial. *Contraception*. 2012;86:536–42. [PubMed: 22445439]
- [10]. Wilson EK, Krieger KE, Koo HP, Minnis AM, Treiman K. Feasibility and acceptability of a computer-based tool to improve contraceptive counseling. *Contraception*. 2014;90:72–8. [PubMed: 24815097]
- [11]. Centers for Disease C, Prevention. U S. Medical Eligibility Criteria for Contraceptive Use, 2010. *MMWR Recomm Rep*. 2010;59:1–86.
- [12]. Madden T, Secura GM, Nease RF, Politi MC, Peipert JF. The role of contraceptive attributes in women's contraceptive decision making. *Am J Obstet Gynecol*. 2015;213:e1–46.
- [13]. Peipert JF, Madden T, Allsworth JE, Secura GM. Preventing unintended pregnancies by providing no-cost contraception. *Obstet Gynecol*. 2012;120:1291–7. [PubMed: 23168752]
- [14]. Vickers AJ, de Craen AJ. Why use placebos in clinical trials? A narrative review of the methodological literature. *J Clin Epidemiol*. 2000;53:157–61. [PubMed: 10729687]
- [15]. Chew LD, Griffin JM, Partin MR, et al. Validation of screening questions for limited health literacy in a large VA outpatient population. *J Gen Intern Med*. 2008;23:561–6. [PubMed: 18335281]
- [16]. Lipkus IM, Samsa G, Rimer BK. General performance on a numeracy scale among highly educated samples. *Med Decis Making*. 2001;21:37–44. [PubMed: 11206945]
- [17]. O'Connor AM. Decisional conflict In: McFarland G, McFarlane E, editors. *Nursing Diagnosis and Intervention*. 2nd ed. St. Louis: C.V. Mosby; 1993.
- [18]. Labrecque M, Paunescu C, Plesu I, Stacey D, Legare F. Evaluation of the effect of a patient decision aid about vasectomy on the decision-making process: a randomized trial. *Contraception*. 2010;82:556–62. [PubMed: 21074020]
- [19]. Dolan JG, Frisina S. Randomized controlled trial of a patient decision aid for colorectal cancer screening. *Med Decis Making*. 2002;22:125–39. [PubMed: 11958495]
- [20]. Shorten A, Shorten B, Keogh J, West S, Morris J. Making choices for childbirth: a randomized controlled trial of a decision-aid for informed birth after cesarean. *Birth*. 2005;32:252–61. [PubMed: 16336366]
- [21]. Vandemheen KL, O'Connor A, Bell SC, et al. Randomized trial of a decision aid for patients with cystic fibrosis considering lung transplantation. *Am J Respir Crit Care Med*. 2009;180:761–8. [PubMed: 19590021]
- [22]. Garvelink MM, Boland L, Klein K, et al. Decisional Conflict Scale Findings among Patients and Surrogates Making Health Decisions: Part II of an Anniversary Review. *Medical Decision Making*. 2019;39:315–26.
- [23]. Garvelink MM, Boland L, Klein K, et al. Decisional Conflict Scale Use over 20 Years: The Anniversary Review. *Medical Decision Making*. 2019;39:301–14. [PubMed: 31142194]
- [24]. O'Connor AM. User Manual—Decisional Conflict Scale (10-item question format), 1993 (updated 2010). Ottawa, ON, Canada: Ottawa Hospital Research Institute; 1993.
- [25]. Banegas MP, McClure JB, Barlow WE, et al. Results from a randomized trial of a web-based, tailored decision aid for women at high risk for breast cancer. *Patient Educ Couns*. 2013;91:364–71. [PubMed: 23395006]
- [26]. Col NF, Ngo L, Fortin JM, Goldberg RJ, O'Connor AM. Can computerized decision support help patients make complex treatment decisions? A randomized controlled trial of an individualized menopause decision aid. *Med Decis Making*. 2007;27:585–98. [PubMed: 17873260]
- [27]. Montgomery AA, Emmett CL, Fahey T, et al. Two decision aids for mode of delivery among women with previous caesarean section: randomised controlled trial. *BMJ*. 2007;334:1305. [PubMed: 17540908]

- [28]. Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: Building an international community of software platform partners. *J Biomed Inform.* 2019;95:103208. [PubMed: 31078660]
- [29]. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform.* 2009;42:377–81. [PubMed: 18929686]
- [30]. Dehlendorf C, Fitzpatrick J, Fox E, et al. Cluster Randomized Trial of a Patient-Centered Contraceptive Decision Support Tool, My Birth Control. *Am J Obstet Gynecol.* 2019.

Implications:

Use of a computerized contraceptive decision aid did not reduce decisional conflict or alter method choice compared to the control group among women choosing reversible contraception. Future studies could focus on testing the decision aid in different clinical settings, especially where barriers to providing comprehensive contraceptive counseling exist.

Figure 1:
Study Flow Diagram

Table 1:

Demographics and baseline characteristics of reproductive-age women randomized to a decision aid or control group

Characteristic	Contraceptive Decision Aid N=166	Control Group N=85	P
Age, mean±SD	28.5±6.2	28.4±6.2	0.94
Race			0.10
Black	62 (37.4)	23 (27.1)	
White	84 (50.6)	55 (64.7)	
Other	20 (12.1)	7 (8.2)	
Hispanic	9 (5.4)	4 (4.7)	0.81
Education			0.27
High school/GED or less	32 (19.3)	14 (16.5)	
Some college	52 (31.3)	20 (23.5)	
Completed college or graduate degree	82 (49.4)	51 (60.0)	
Low socioeconomic status *	57 (34.3)	28 (32.9)	0.83
Insurance †			0.39
None	8 (4.8)	2 (2.4)	
Public/Medicaid	41 (24.7)	19 (22.4)	
Commercial	117 (70.5)	63 (74.1)	
Insurance covers contraception	137 (82.5)	69 (81.2)	0.88
Prior pregnancy	93 (56.0)	49 (59.0)	0.65
Prior unintended pregnancy	64 (68.8)	24 (49.0)	0.02
Weight (lbs), mean±SD	165.6±47.2	167.2±40.6	0.80
Would like to be pregnant in the future	102 (61.5)	55 (66.3)	0.55
Future pregnancy timing			0.96
Less than a year	9 (8.8)	5 (9.1)	
More than a year	93 (91.2)	50 (90.9)	
Medical contraindication	52 (31.3)	25 (29.4)	0.76
Tobacco use	17 (10.2)	8 (9.6)	0.88
Use the Internet	162 (97.6)	84 (100.0)	0.30
Participant confidence filling out medical forms ‡			
Always	102 (61.5)	57 (67.1)	0.54
Most of the time	47 (28.3)	21 (24.7)	
Sometimes	16 (9.6)	6 (7.1)	
Never	1 (0.6)	0 (0)	
Participant requests aid when reading healthcare materials ‡			0.27
Always	5 (3.0)	5 (5.9)	
Most of the time	7 (4.2)	3 (3.5)	
Sometimes	56 (33.7)	21 (24.7)	
Never	98 (59.0)	55 (64.7)	
Participant preference when receiving health information ‡			0.13

Characteristic	Contraceptive Decision Aid N=166	Control Group N=85	P
Prefers words	33 (19.9)	11 (12.9)	0.55
Prefers numbers	102 (61.5)	62 (72.9)	
No preference	31 (18.7)	11 (12.9)	
Participant selection of biggest risk of getting a disease [§]			
1 in 100	18 (10.8)	9 (10.6)	
1 in 1000	12 (7.2)	5 (5.9)	
1 in 10	136 (81.9)	70 (82.4)	

Data are n (%) unless otherwise specified.

* Low SES defined as receipt of public assistance

[†] Percentages do not add up to 100% due to one missing response. Other percentages may not add up to 100% due to rounding.

[‡] Literacy questions from Chew et al, 2008

[§] Numeracy questions from Lipkus et al, 2001

Table 2:

Total and pre/post change in decisional conflict scores in reproductive-age women randomized to a contraceptive decision aid or control group

	Contraceptive Decision Aid		Control Group		<i>P</i>
	N		N		
Pre-visit DCS	166	15 (0–80)	83	10 (0–85)	0.45
Post-visit DCS	161	0 (0–70)	80	0 (0–35)	0.47
Change in DCS	161	–10 (–80–25)	80	–10 (–60–5)	0.99

Data are presented as median (range)

DCS – decisional conflict score

Decisional conflict scored from 0 to 100; 0 represents no decisional conflict and 100 represents high decisional conflict.

Table 3:

Contraceptive method chosen at end of health care provider visit by study group

	Contraceptive Decision Aid N=161	Control Group N=80	<i>P</i> [*]
Discussed contraception with provider	156 (96.9)	78 (97.5)	0.79
Chose new contraceptive method	83 (51.6)	39 (48.6)	0.66
Contraceptive method chosen			0.23
LNG-IUS	45 (28.0)	21 (26.3)	
Copper IUD	9 (5.6)	3 (3.8)	
Implant	9 (5.6)	6 (7.5)	
DMPA	19 (11.8)	4 (5.0)	
OCPs	57 (35.4)	29 (36.3)	
Contraceptive patch	1 (0.6)	0 (0)	
Vaginal ring	8 (5.0)	5 (6.3)	
Sterilization	0 (0.0)	3 (3.8)	
Condoms	7 (4.4)	4 (5.0)	
Other	1 (0.6)	3 (3.8)	
No method/undecided	5 (3.1)	2 (2.5)	

Data are presented as n (%)

LNG-IUS – levonorgestrel intrauterine system; IUD – intrauterine device; DMPA – depo-medroxyprogesterone acetate; OCPs – oral contraceptive pills

*
p-value calculated using Fisher's exact test