

UCSF

UC San Francisco Previously Published Works

Title

Pill, patch or ring? A mixed methods analysis of provider counseling about combined hormonal contraception

Permalink

<https://escholarship.org/uc/item/5r77868s>

Journal

Contraception, 99(2)

ISSN

0010-7824

Authors

Craig, Amaranta D
Steinauer, Jody
Kuppermann, Miriam
[et al.](#)

Publication Date

2019-02-01

DOI

10.1016/j.contraception.2018.09.001

Peer reviewed



HHS Public Access

Author manuscript

Contraception. Author manuscript; available in PMC 2021 April 17.

Published in final edited form as:

Contraception. 2019 February ; 99(2): 104–110. doi:10.1016/j.contraception.2018.09.001.

Pill, Patch, or Ring? A Mixed Methods Analysis of Provider Counseling about Combined Hormonal Contraception

Amaranta D. Craig, MD¹, Jody Steinauer, MD MAS¹, Miriam Kuppermann, PhD, MPH^{1,5}, Julie A. Schmittdiel, PhD³, Christine Dehlendorf, MD, MAS^{1,2,4}

¹Department of Obstetrics, Gynecology, and Reproductive Sciences, University of California San Francisco, San Francisco, California

²Department of Family and Community Medicine, University of California San Francisco, San Francisco, California

³Kaiser Permanente Northern California Division of Research, Oakland, California

⁴Bixby Center for Global Reproductive Health, University of California San Francisco, San Francisco, California

⁵Department of Epidemiology & Biostatistics, University of California San Francisco, San Francisco, California

Abstract

Objective: In this study we aimed to investigate the content and process of contraceptive counseling surrounding combined hormonal contraceptive (CHC) methods (combined oral contraceptives, the ring, and the patch).

Study Design: We performed a mixed methods analysis of data collected as part of the Patient-Provider Communication about Contraception study, in which reproductive age women and their providers were recruited at several San Francisco Bay Area clinics from 2009–2012. Participants completed pre- and post-visit surveys, and had their visits audio recorded and transcribed. We performed descriptive and bivariate analyses of the entire cohort to examine associations between demographic characteristics and pre-existing method preferences with method selection and counseling content, and coded transcripts of a subset of the sample for salient themes related to content and process of counseling about combined hormonal contraceptive methods using a directed content analysis approach.

Results: The overall sample included 342 women, with 152 women (44%) having a preference for a specific CHC prior to their visit, 127 women (37%) had a preference for a non-CHC method, and 63 (18%) having no existing method preference. Of the women who reported preferring a CHC in their pre-visit survey, the majority (72%) chose that method. We found that women were

Corresponding author: Amaranta D. Craig, MD, University of California, San Francisco, Department of Obstetrics, Gynecology and Reproductive Sciences, 550 16th Street, 7th floor, San Francisco, CA 94143; amaranta.craig@ucsf.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

inconsistently counseled about the range of CHC methods. For example, women who had no pre-visit method preference (52%) or who preferred the ring (54%) or the patch (73%) were more likely to receive comprehensive counseling about the three CHC methods than were women who preferred combined oral contraceptives (35%) or non-CHC methods (33%). Providers mentioned the patch the least often, and in qualitative analysis indicated discomfort with prescribing this method. Side effects and benefits of methods, as well as strategies to enhance successful use of the chosen method, were inconsistently discussed. In only 73% of visits in which a woman chose a CHC did the provider assess the patient's ability to use the chosen method correctly, and in 66% of all visits in which women chose a CHC method, providers discussed what to do if she was dissatisfied with the method.

Conclusions: Counseling about combined hormonal contraceptive methods often does not include information about all available methods, or comprehensive information about side effects, benefits, or logistics of use. As this counseling can impact patient's satisfaction with and continuation of their chosen method of contraception, future work should focus on designing interventions to improve providers' ability to meet patients' needs.

Keywords

Hormonal contraception; contraceptive counseling; vaginal ring; contraceptive patch; combined oral contraceptive pills

1. Introduction

Nearly half of all pregnancies in the United States (US) yearly are unintended [1]. While correct and consistent use of effective contraception may prevent unintended pregnancy, many women do not use any method, use their method incorrectly, or discontinue their method after a short period of time [2–6]. Currently, all non-barrier methods require consultation and prescription from a provider in most US states, resulting in providers having an opportunity and responsibility to support patients' contraceptive use whenever they initiate or change methods. A small body of literature, both internationally and from the US, has shown that counseling may influence contraception use [7–11] including method choice, adherence, continuation and correct use, with higher quality of care and a positive patient-provider relationship being associated with method choice, and contraceptive continuation [12–14]. More specifically, a few studies have found that disclosure of information about potential side effects is associated with improved outcomes [15–17], specifically method continuation and patient satisfaction. In addition, studies have found that whether and how providers discuss specific methods influences women's method choice [7, 18].

Counseling about combined hormonal contraceptive (CHC) methods (combined oral contraceptives, the vaginal ring, and the transdermal patch) has particular importance, as these methods are the most commonly used in the US, with more than 11 million women using them in 2010 [19]. Combined oral contraceptives, specifically, have remained the most frequently used reversible method over the past several decades, despite the introduction of multiple new methods during that time. Counseling about these methods is therefore a

common occurrence in family planning settings, and its quality has implications for the ability of a significant number of women to prevent unplanned pregnancy.

An important consideration when counseling about these methods is their specific features, including that they are user-dependent and require continuous usage and frequent dosing. As a result of these characteristics, the effectiveness of these methods in typical use, 93%, is substantially lower than the 99% seen with perfect use [20]. Furthermore, some women using these methods experience bothersome hormonal side effects, resulting in incorrect use or discontinuation [21–23]. Counseling about these methods can address issues related to method adherence and side effects, both of which have the potential to influence method selection, as well as a women’s ability to use these methods correctly and consistently [24–28]. In addition, providers can help women interested in a combined hormonal method choose between the three methods – combined oral contraceptive, patch, and ring – which, while having similar side effect profiles, have substantial differences in dosing forms and schedules.

With respect to counseling specifically about CHCs, limited international studies [29–31] have examined the impact of structured contraceptive counseling on choice of CHC; Prior studies using this data set have examined counseling about intrauterine devices [32] and sterilization [33], as well as differing aspects of contraceptive counseling more generally [34, 35]. However, no previous studies have focused on investigating the counseling that currently occurs around use of CHC methods specifically [36], including issues related to their unique characteristics, such as side effects and different modes of use.

In this analysis of audio recordings of contraceptive counseling visits, we aimed to further explore the process and content of contraceptive counseling about combined hormonal methods. Given that the three combined hormonal methods have distinct characteristics, and that patient’s pre-existing preferences for methods can be influential over counseling [28, 33, 37], we qualitatively and quantitatively investigated differences in counseling according to whether patients had a preference for a specific CHC method. In addition, we explored the counseling that occurred for those who chose specific CHC methods related to the logistics of method use and side effects. By understanding current counseling practices and identifying any potential gaps, this analysis can be used in the development of future, patient-centered interventions to optimize this counseling.

2. Methods

2.1 Sample selection

This study uses data collected as part of the Patient-Provider Communication about Contraception (PPCC) study, previously described in detail [14, 32, 34, 35]. Briefly, women visiting six clinics in the San Francisco Bay Area between August 2009 and January 2012 had their contraceptive counseling visits audio recorded and completed written pre- and post-visit surveys. Inclusion criteria for providers included being a physician, physician assistant, certified nurse midwife or nurse practitioner, while inclusion criteria for patients were wishing to discuss initiating or changing their contraceptive method and self-identifying as being white, black, or Latina. The race/ethnicity specifications were motivated

by the parent study, which was designed to investigate differences in counseling based on race/ethnicity. All patients and providers completed written informed consent prior to the clinical encounter and the study received approval from the Institutional Review Board at the University of California, San Francisco.

2.2 Quantitative Measures

2.2.1 Surveys—The written pre-visit questionnaire included items related to sociodemographic characteristics and whether the woman had a preference for a specific contraceptive method (*Do you have a preference for what birth control method you will start after this clinic visit?*). Immediately after the visit, participants completed a questionnaire about the visit, and identified which method they ultimately chose. Providers also completed a one-time written survey providing demographic information.

2.2.2 Visit Content—To obtain quantitative measures of visit content, we audio recorded all visits using a portable recorder placed in the room, and a HIPPA compliant vendor transcribed the recordings verbatim. We then coded all transcripts using a checklist of key aspects of contraceptive counseling to describe the content of the visit. We developed this checklist with the input of family planning clinicians and researchers to describe important content for counseling both before and after method choice. Checklist items related to CHC included the mention of specific methods, as well as counseling about the possibility of having specific side effects and benefits of individual methods. The checklist also included items related to whether or not specific topics related to the logistics of method use were mentioned during the visit. This included items relevant to all methods, such as what the patient should do if dissatisfied with the method and if the provider assessed patient's ability to use the method correctly, as well as items that were specific to individual methods, such as what to do if a combined oral contraceptive was missed or if a ring fell out. Trained coders conducted the coding after confirming adequate inter-coder reliability. We resolved any ambiguities in the coding in group meetings with the senior author (CD).

2.3 Data analysis

2.3.1 Quantitative—To describe our sample, we first determined the association between demographic characteristics and pre-visit method preference, as well as pre-visit preference and chosen method, using chi-squared, Fisher's exact and ANOVA tests as applicable. For quantitative assessment of provider counseling during the decision making process, we determined the number of methods mentioned during counseling and whether the patient left with her initially preferred method, both overall and by initial method preference using chi-squared and Fisher's exact testing. We also performed quantitative analysis limited to those who chose a CHC method, in order to determine the frequency with which counseling about specific aspects of the chosen method (side effects, benefits, and logistics of use) that are relevant to use of the method occurred. We determined the proportion of these visits in which specific content was mentioned, and then examined differences in proportions across categories of method choice, again using chi-squared and Fisher's exact testing.

2.3.2 Qualitative—For qualitative analyses, we initially stratified our full sample of 342 transcripts by which method the woman chose during the visit (combined oral contraceptive, ring, patch, or non-CHC method) and selected a random sample of transcripts from each group. In order to obtain adequate representation in initial method preference, we then purposively selected additional visits based on the pre-visit method preference, as measured in the pre-visit survey previously described.

In the total qualitative sample (71 visits), we coded 18 visits in which women had a preference for the combined oral contraceptive, 11 who preferred the patch, 10 who preferred the ring, 20 who had no preference for any particular method and 12 who preferred a non-hormonal method. With respect to ultimate method choice, this sample included 25 visits in which women chose the combined oral contraceptive, 19 in which women chose the ring, 7 in which women chose the patch (representing all women in the study choosing this method), and 20 visits in which the woman chose a non-CHC method.

We used a directed content analysis approach [38], a technique that uses a combination of predetermined codes and codes identified in the analysis, to organize and explore the content of contraceptive counseling. The first (AC) and senior (CD) authors iteratively developed a coding list using themes that emerged from the data and themes from the literature. Predetermined codes described content considered to be important in contraceptive counseling, as defined both by input from family planning researchers and clinicians, as described above, and by a review of the literature [37]. This included education about different methods, counseling about adherence and logistics of method use, and discussion of side effects. In addition, we drew from CD's previous work on models of counseling to code whether providers "foreclosed" the discussion of methods based on patient's pre-existing preferences [37]. The codes that were not pre-determined included more nuanced assessments of provider communication, such as differences in how providers presented different methods. To ensure consistency in coding, AC and CD identified codes in 30 transcripts and developed a detailed codebook with examples and descriptions of each code. After finalizing the coding structure, AC coded all transcripts, and CD also coded a subset of the visits to ensure fidelity in coding and agreement with the coding structure. Upon completion of coding the 71 chosen transcripts we found that we had sufficient data to describe the codes, thus achieving thematic saturation. We used NVivo versions 8 and 10 (QSR International Pty Ltd) to organize the data.

3. Results

A total of 342 participants provided data for the quantitative analysis (7 participants from the original sample did not have audio recorded data and were therefore excluded). The sociodemographic characteristics of the patient participants by initial method preference are displayed in Table 1, with parity being the only sociodemographic variable associated with these preferences.

Thirty-eight providers participated in the study, with an average age of 50 years (range 35–74) (data not shown). Ninety-eight percent were women, with the majority being nurse practitioners (61%), although obstetrics/gynecology physicians (17%), family medicine

physicians (13%), physician assistants (5%) and certified nurse midwives (5%) also participated.

3.1 METHOD SELECTION

In order to understand the process of method selection, we quantitatively analyzed counseling around method preference and method introduction for the entire 342 women in our sample, and qualitative analyses included all 71 transcripts as previously described.

3.1.1 Women with a preference for a CHC method—Of the entire study sample, 127 women (37%) had a preference for a non-CHC method, and 63 women (18%), had no pre-visit method preference. Of the 152 women (44% of the total study sample) with a pre-visit preference for a CHC method, the majority (72%) left with the method they initially preferred, and an additional 7% chose a different CHC method (data not shown). Those with a preference for combined oral contraceptives (78%) and the ring (75%) were significantly more likely to leave with their preferred method than those with a preference for the patch (9%, Table 1).

In qualitative analysis of provider communication about different methods, we found that providers seeing women with a preference for a CHC method often agreed to start the patient's preferred CHC method without discussing, in a more than cursory fashion, any other methods, including failing to explore whether one of the other two CHC methods might be more appropriate. In cases where other CHC methods were introduced, this often involved simply mentioning a method without exploring the patient's initial method preference, knowledge about each method, describing the methods' unique characteristics, or comparing one CHC method to another. An example of this dynamic is provided in the following exchange, where the provider makes a passing reference to the ring while counseling a woman with a preference for combined oral contraceptives:

Clinician: ...Have you ever considered something like the NuvaRing or do you definitely want to go with the oral tablet?

Patient: I definitely want to go with the pill.

Clinician: Good. You seem to know what you want, my dear.

(47 year-old white nurse practitioner speaking to 17 year-old white patient)

A few providers described other methods besides the one originally preferred by the patient. This more thorough counseling often revealed that despite their original preference, the patient was unaware of other methods:

Patient: I was interested in starting birth control.

Clinician: Okay. Any particular type of birth control?

Patient: Definitely pills.

Clinician: Definitely pills. Okay. Do you know about the different methods of hormonal birth control?

Patient: No. I wanted to learn about the different options.

...

Clinician: Okay. So, you've never been on anything before then.

Patient: Nope.

(54 year-old white female nurse practitioner speaking to 19 year-old Hispanic patient)

With respect to the low proportion of those who had a preference for the patch who in fact chose that method, we found in quantitative analysis of the entire sample that women with a preference for the patch received the most comprehensive counseling about other CHC methods (Table 2). For those that preferred combined oral contraceptives, 35% had all three CHC methods mentioned compared to 54% for those who preferred the ring and 73% for those with a patch preference. Further, when providers mentioned CHC methods other than the one for which the patient expressed a preference, they were least likely to mention the patch. Qualitatively, when discussing different CHC methods, providers used more complimentary language in describing the ring than the patch. For example, one provider stated to a patient preferring combined oral contraceptives:

“...the patch isn't always the first thing I recommend to women, but if she's missing a lot of pills and that kind of thing, then that'll be one thing. The ring is great...you don't have to think about it for a month and you don't get that double up, you know, nausea and stuff....” (47 year-old white nurse practitioner speaking to 22 year-old African American patient)

Providers seeing women with a preference for the patch often indicated discomfort with prescribing this method due to concerns about safety. Specifically, providers indicated that they were more concerned about adverse outcomes with the patch, as compared to other estrogen-containing methods, due to higher estrogen levels, and actively discouraged women from choosing the patch for this reason by describing it, for example, as a “last resort”.

3.1.2 Women without a method preference or with a preference for a non-CHC method—In quantitative analysis of the whole sample, while providers mentioned combined oral contraceptives to nearly all of the women without a method preference (94%, Table 2), only slightly more than half of providers mentioned all three CHC methods. For women who preferred a non-CHC method, combined oral contraceptives were mentioned substantially more often (81%) than the ring (49%) and the patch (38%); furthermore, only one-third of visits include mention of all three methods.

In qualitative analysis, women who preferred a non-CHC method often introduced their preferred method and explained why other methods, including CHC methods, did not work for them. In a few cases, the provider introduced CHC methods by targeting a specific characteristic the patient desired, such as avoiding a side effect or decreasing dosing frequency. Similar to women preferring CHC methods, in a few cases the provider simply agreed to start the preferred method with limited or no discussion of other methods.

In most cases where CHC methods were mentioned to women without a preference, they were largely presented as default methods, as one provider (52 year-old white female nurse

practitioner) described to a 20 year-old Hispanic patient“... You know, condoms are good, but if you...want to have something a little more effective and secure we could try you on the birth control pill. That’s kind of a good start. We have other methods too but a lot of people, for their first start, the pill is the good way to go...”

3.2 COUNSELING FOR WOMEN CHOOSING A CHC METHOD

In order to understand the experiences of women who chose a CHC method with respect to counseling about side effects, benefits, and logistics of method use, we quantitatively analyzed the content of counseling only among the 173 women in our sample who choose the combined oral contraceptive, patch or ring.

3.2.1 Side Effects Counseling—In quantitative analysis, potential side effects were infrequently mentioned to the 173 women who chose a CHC method (Table 3). The possibility of breast symptoms (e.g. pain or tenderness) was more frequently mentioned to women choosing the patch than to women choosing combined oral contraceptives, while those choosing the ring were less likely to be counseling about mood changes/depression and weight gain than those choosing combined oral contraceptives. In qualitative analysis, we found that when discussing side effects, some providers emphasized that due to the short acting nature of CHC methods, patients could discontinue them at any time if side effects became a concern.

Interviewer: ...So, the pill is great because ...if you don’t like the method for whatever reason you can just stop taking it and typically the side effects or whatever it is about the method you’re using goes away almost immediately because the, sort of, the duration that’s in your system is very short. That’s why you have to take it every day.

(37 year-old Hispanic female nurse practitioner speaking to 26 year-old Hispanic patient)

3.2.2 Counseling about non-contraceptive benefits—Non-contraceptive health benefits of CHC methods were also inconsistently mentioned (Table 3). Notably, regulation of periods was more often mentioned in visits where the patch and ring were chosen (43% and 21%), as compared to combined oral contraceptives (11%). Improvement of acne or clear skin was the least frequently mentioned benefit. Qualitatively, providers typically listed these benefits alongside other negative side effects without extensive explanation, but in a few cases, providers explicitly educated patients about these benefits as a standard indication to use a CHC method even when women were not at risk of unintended pregnancy:

Interviewer: ...The benefits are usually pills will lighten the period. We often put people on birth control even when they don’t need protection from pregnancy for acne because it tends to ...help with acne, also to make the period lighter.

(52 year-old white female nurse practitioner talking to 22 year-old white patient)

3.2.4 Counseling on logistics of use—Providers infrequently engaged in discussions of how to use the chosen method correctly and consistently (Table 4). Overall, in only 73%

of visits in which a woman chose a CHC did the provider assess the patient's ability to use the chosen method correctly, with the percentage of visits in which this assessment occurred varying from 49% of visits with woman who chose the ring to 86% of visits with women who chose the patch. They also infrequently discussed correct use of methods, but the majority did discuss refills or follow-up plans. In 34% of all visits in which women chose a CHC method, providers did not discuss what to do if she was dissatisfied with the method. In visits with women choosing the patch, 29% included discussion of what to do if the patch falls off; similarly, with women choosing the ring, 36% discussed what to do if the ring falls out.

In qualitative analysis, discussions surrounding method adherence included both assessing patients' past behaviors and improving future method adherence. In these discussions, however, providers rarely used neutral language. For example, during the method selection process these conversations would often be initiated by the provider asking if a patient was "good" with remembering to take a pill.

Interviewer: ...So, are you thinking about any other method or do you feel clear that you want to do the pill?

Patient: Just the pill.

Interviewer: Are you pretty good about taking the pill every day when you're on them?

Patient: Yeah.

(39 year-old white female nurse practitioner speaking to 17 year-old African American patient)

This framing appeared to limit the responses from patients, with many responding simply with one-word, affirmative answers. Analysis of the discussion of follow-up plans revealed that when providers discussed follow-up, they did so in a non-specific manner that placed the onus on the patient. For example, in a few cases providers told the patient they did not need to come back for follow-up, without referencing the possible need for future care related to problems with the method. A small number of providers mentioned the availability of follow-up care if they had problems, explicitly opening the door to changing methods.

Provider: But otherwise, you don't have to come back for anything until the pill, one year of pills is up....So, feel free to come back and see us if you feel like it's not the right pill for you. I mean that's, you know, you don't have to stick with it and I certainly don't want to you be unprotected against pregnancy if you don't want to be...so come back and we'll talk about changing it to a different, kind of a trial of something different."

(47 year-old white nurse practitioner speaking to 30 year-old Hispanic patient)

4. Discussion

Our qualitative and quantitative analysis of audio recordings of contraceptive counseling visits identified a lack of comprehensive counseling about CHC methods related to method choice, method side effects and benefits, and the logistics of method use.

Women who were parous were more likely to have a pre-existing preference for the patch or a non-CHC method, which may be explained by greater contact with the healthcare system or potentially more past experiences with other contraceptive methods. With respect to counseling about method choice, we found that, quantitatively, providers were least likely to counsel about the patch, and that women with a preference for the patch were less likely to leave with their preferred method than were those with a preference for combined oral contraceptives or the ring. Our qualitative data provided context for these results, in that we found that when the patch was discussed, providers often expressed concerns about the method, which often led to discouraging its use. This finding is likely related to the 2005 FDA black box warning [39] added to the contraceptive patch prescribing information regarding concerns about higher levels of estrogen with the patch compared to combined oral contraceptives.

More broadly, our quantitative data showed that while counseling about the ring occurred more frequently than the patch, this was still much less common than combined oral contraceptives. This pattern of counseling resulted in many women, and particularly those with a pre-visit preference for combined oral contraceptives, not hearing about all their method options. While patient-centered counseling does not necessarily require reviewing all methods, the differential discussion of the different CHC methods, with patch and the ring being less commonly mentioned, raises the question of whether women are being adequately counseled about these newer methods. This is particularly relevant for women with a preference for a CHC method, as their expressed interest in an estrogen-containing method may indicate interest in other methods with similar characteristics and side effect profiles. Our qualitative data suggests that in fact there were missed opportunities for counseling about additional methods, as women who had a preference for a method who did receive more comprehensive counseling often indicated that they had not previously known about their options. These findings suggest that the percentage of women who left with their initially preferred method would potentially be lower if patients in fact received more comprehensive counseling, and that this may particularly be true of those with a preference for the combined oral contraceptive pill.

Among patients who chose a CHC method, providers often failed to discuss the methods' side effects. These results are consistent with another study that assessed the content of US contraceptive counseling, with a focus on intrauterine contraception [32]. As counseling about side effects has been associated with improved contraceptive use including continuation [15–17], this represents a lost opportunity to support patients' contraceptive use. In addition, providers often failed to provide counseling to facilitate patients' successful method use, such as providing information about correct use and making a plan for refills. This inadequate information may negatively affect both adherence and continuation of the chosen method [40].

This study has several limitations. Because we audio recorded the clinical interaction, providers may have experienced a Hawthorne effect and modified their counseling approach. However, this would be expected to improve the quality of counseling compared to usual care. Given that all clinics were in a geographically limited urban setting with access to all contraceptive methods, generalizability to other populations may be affected, although, again, this would likely result in more comprehensive counseling in this sample given that providers in the San Francisco Bay Area may have greater access to reproductive health training and education due to relatively high levels of funding for family planning programs in California [41] and the presence of a robust family planning community. In addition, the fact that this data were collected between 2009 and 2012 raises the question of whether counseling content may have changed since this time. However, as no new CHC methods have been introduced, we do not consider this to be very likely, although nationwide there has been a shift towards promotion of long-acting methods such as the intrauterine device or contraceptive implant. Finally, our findings reflect communication initiated by either the provider or the patient, and therefore may overestimate the quality of counseling provided in settings where patients are less engaged or communicative in the clinical encounter.

Overall, the observed gaps in counseling suggest that family planning patients may not receive counseling about their full range of methods and may fail to receive the information and support they need to optimize their contraceptive use once they select a method. Reasons for these findings are likely multifactorial, including lack of time, lack of training, and, with respect to mention of specific methods, assumptions about patient interest in these methods. To improve contraception counseling, clinicians should consider using technology such as decision aids or computer modules during the clinical visit [42–46], which can increase the standardization and comprehensiveness of counseling, and training in patient counseling [12, 14, 47–51] targeted towards identified deficiencies. By improving the provision of patient-centered, comprehensive contraceptive counseling, women can be better supported to make informed decisions about their reproductive health and to achieve their reproductive goals.

Acknowledgements:

Presentation of this work was made possible by grant number R25MD006832 from the National Institute on Minority Health and Health Disparities (Dr. Craig) and grant number K23HD067197 from the Eunice Kennedy Shriver National Institute of Child Health & Human Development (Dr. Dehlendorf).

References

- [1]. Finer LB, Zolna MR. Declines in Unintended Pregnancy in the United States, 2008–2011. *The New England journal of medicine*. 2016;374:843–52. [PubMed: 26962904]
- [2]. Frost JJ, Singh S, Finer LB. U.S. women’s one-year contraceptive use patterns, 2004. *Perspectives on sexual and reproductive health*. 2007;39:48–55. [PubMed: 17355381]
- [3]. Grady WR, Billy JOG, Klepinger DH. Contraceptive method switching in the United States. *Perspectives on sexual and reproductive health*. 2002;34:135–45. [PubMed: 12137127]
- [4]. Rosenberg MJ, Waugh MS. Oral contraceptive discontinuation: A prospective evaluation of frequency and reasons. *American journal of obstetrics and gynecology*. 1998;179:577–82. [PubMed: 9757954]

- [5]. Vaughan B, Trussell J, Kost K, Singh S, Jones R. Discontinuation and resumption of contraceptive use: results from the 2002 National Survey of Family Growth. *Contraception*. 2008;78:271–83. [PubMed: 18847574]
- [6]. Wellings K, Brima N, Sadler K, et al. Stopping and switching contraceptive methods: findings from Contessa, a prospective longitudinal study of women of reproductive age in England. *Contraception*. 2015;91:57–66. [PubMed: 25444254]
- [7]. Harper CC, Brown BA, Foster-Rosales A, Raine TR. Hormonal contraceptive method choice among young, low-income women: how important is the provider? Patient education and counseling. 2010;81:349–54. [PubMed: 20837389]
- [8]. Gemzell-Danielsson K, Thunell L, Lindeberg M, Tyden T, Marintchieva-Petrova M, Oddens BJ. Comprehensive counseling about combined hormonal contraceptives changes the choice of contraceptive methods: results of the CHOICE program in Sweden. *Acta obstetrica et gynecologica Scandinavica*. 2011;90:869–77. [PubMed: 21564028]
- [9]. Lee JK, Parisi SM, Akers AY, Borrero S, Schwarz EB. The impact of contraceptive counseling in primary care on contraceptive use. *Journal of general internal medicine*. 2011;26:731–6. [PubMed: 21301983]
- [10]. Zhu JL, Zhang WH, Cheng YM, et al. Impact of post-abortion family planning services on contraceptive use and abortion rate among young women in China: a cluster randomised trial. *Eur J Contracep Repr*. 2009;14:46–54.
- [11]. Halpern V, Lopez LM, Grimes DA, Stockton LL, Gallo MF. Strategies to improve adherence and acceptability of hormonal methods of contraception. *Cochrane database of systematic reviews*. 2013.
- [12]. RamaRao S, Lacuesta M, Costello M, Pangolibay B, Jones H. The link between quality of care and contraceptive use. *International family planning perspectives*. 2003;29:76–83. [PubMed: 12783771]
- [13]. Koenig MA, Hossain MB, Whittaker M. The influence of quality of care upon contraceptive use in rural Bangladesh. *Studies in family planning*. 1997;28:278–89. [PubMed: 9431649]
- [14]. Dehlendorf C, Henderson JT, Vittinghoff E, et al. Association of the quality of interpersonal care during family planning counseling with contraceptive use. *American journal of obstetrics and gynecology*. 2016;215.
- [15]. Canto De Cetina TE, Canto P, Ordonez Luna M. Effect of counseling to improve compliance in Mexican women receiving depot-medroxyprogesterone acetate. *Contraception*. 2001;63:143–6. [PubMed: 11368986]
- [16]. Lei ZW, Wu SC, Garceau RJ, et al. Effect of pretreatment counseling on discontinuation rates in Chinese women given depo-medroxyprogesterone acetate for contraception. *Contraception*. 1996;53:357–61. [PubMed: 8773423]
- [17]. Backman T, Huhtala S, Luoto R, Tuominen J, Rauramo I, Koskenvuo M. Advance information improves user satisfaction with the levonorgestrel intrauterine system. *Obstetrics and gynecology*. 2002;99:608–13. [PubMed: 12039121]
- [18]. Bitzer J, Cupanik V, Fait T, et al. Factors influencing women's selection of combined hormonal contraceptive methods after counselling in 11 countries: results from a subanalysis of the CHOICE study. *The European journal of contraception & reproductive health care : the official journal of the European Society of Contraception*. 2013;18:372–80.
- [19]. Mosher WD, Jones J. Use of contraception in the United States: 1982–2008. *Vital and health statistics Series 23, Data from the National Survey of Family Growth*. 2010:1–44.
- [20]. Sundaram A, Vaughan B, Kost K, et al. Contraceptive Failure in the United States: Estimates from the 2006–2010 National Survey of Family Growth. *Perspectives on sexual and reproductive health*. 2017;49:7–16. [PubMed: 28245088]
- [21]. Gardner J, Miller L. Promoting the safety and use of hormonal contraceptives. *J Womens Health*. 2005;14:53–60.
- [22]. Frost JJ, Lindberg LD, Finer LB. Young adults' contraceptive knowledge, norms and attitudes: associations with risk of unintended pregnancy. *Perspectives on sexual and reproductive health*. 2012;44:107–16. [PubMed: 22681426]

- [23]. Rickert VI, Berenson AB, Williamson AJ, Wiemann CM. Immediate recall of oral contraceptive instructions: implications for providers. *American journal of obstetrics and gynecology*. 1999;180:1399–406. [PubMed: 10368477]
- [24]. Stanwood NL, Bradley KA. Young pregnant women's knowledge of modern intrauterine devices. *Obstetrics and gynecology*. 2006;108:1417–22. [PubMed: 17138775]
- [25]. Grady WR, Klepinger DH, Nelson-Wally A. Contraceptive characteristics: the perceptions and priorities of men and women. *Family planning perspectives*. 1999;31:168–75. [PubMed: 10435215]
- [26]. Forrest JD. U.S. women's perceptions of and attitudes about the IUD. *Obstetrical & gynecological survey*. 1996;51:S30–4. [PubMed: 8972500]
- [27]. Steiner MJ, Trussell J, Mehta N, Condon S, Subramaniam S, Bourne D. Communicating contraceptive effectiveness: A randomized controlled trial to inform a World Health Organization family planning handbook. *American journal of obstetrics and gynecology*. 2006;195:85–91. [PubMed: 16626610]
- [28]. Dehlendorf C, Krajewski C, Borrero S. Contraceptive counseling: best practices to ensure quality communication and enable effective contraceptive use. *Clinical obstetrics and gynecology*. 2014;57:659–73. [PubMed: 25264697]
- [29]. Lete I, Doval JL, Perez-Campos E, et al. Factors affecting women's selection of a combined hormonal contraceptive method: the TEAM-06 Spanish cross-sectional study. *Contraception*. 2007;76:77–83. [PubMed: 17656174]
- [30]. Gambera A, Corda F, Papa R, et al. Observational, prospective, multicentre study to evaluate the effects of counselling on the choice of combined hormonal contraceptives in Italy--the ECOS (Educational COunselling effectS) study. *BMC women's health*. 2015;15:69. [PubMed: 26329464]
- [31]. Bitzer J, Gemzell-Danielsson K, Roumen F, Marintcheva-Petrova M, van Bakel B, Oddens BJ. The CHOICE study: effect of counselling on the selection of combined hormonal contraceptive methods in 11 countries. *The European journal of contraception & reproductive health care : the official journal of the European Society of Contraception*. 2012;17:65–78.
- [32]. Dehlendorf C, Tharayil M, Anderson N, Gbenedio K, Wittman A, Steinauer J. Counseling About IUDs: A Mixed-Methods Analysis. *Perspectives on sexual and reproductive health*. 2014.
- [33]. Kimport K, Dehlendorf C, Borrero S. Patient-provider conversations about sterilization: A qualitative analysis. *Contraception*. 2017;95:227–33. [PubMed: 27823943]
- [34]. Levy K, Minnis AM, Lahiff M, Schmittiel J, Dehlendorf C. Bringing patients' social context into the examination room: an investigation of the discussion of social influence during contraceptive counseling. *Women's health issues : official publication of the Jacobs Institute of Women's Health*. 2015;25:13–21.
- [35]. Minnis AM, Mavedzenge SN, Luecke E, Dehlendorf C. Provider Counseling to Young Women Seeking Family Planning Services. *Perspectives on sexual and reproductive health*. 2014.
- [36]. Moos MK, Bartholomew NE, Lohr KN. Counseling in the clinical setting to prevent unintended pregnancy: an evidence-based research agenda. *Contraception*. 2003;67:115–32. [PubMed: 12586322]
- [37]. Dehlendorf C, Kimport K, Levy K, Steinauer J. A Qualitative Analysis of Approaches To Contraceptive Counseling. *Perspectives on sexual and reproductive health*. 2014.
- [38]. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15:1277–88. [PubMed: 16204405]
- [39]. 2005.
- [40]. Frost JJ, Singh S, Finer LB. Factors associated with contraceptive use and nonuse, United States, 2004. *Perspectives on sexual and reproductive health*. 2007;39:90–9. [PubMed: 17565622]
- [41]. Cross Reidel JTdB H Access to Publicly-Funded Family Planning Services by Women in Need, Fiscal Year 2009–10 to Fiscal Year 2012–13. 2015.
- [42]. 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]

- [43]. 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]
- [44]. Chewning B, Mosena P, Wilson D, et al. Evaluation of a computerized contraceptive decision aid for adolescent patients. *Patient education and counseling*. 1999;38:227–39. [PubMed: 10865688]
- [45]. French RS, Wellings K, Cowan FM. How can we help people to choose a method of contraception? The case for contraceptive decision aids. *J Fam Plan Reprod H*. 2009;35:219–20.
- [46]. O'Connor AM, Bennett CL, Stacey D, et al. Decision aids for people facing health treatment or screening decisions. *Cochrane database of systematic reviews*. 2009:CD001431.
- [47]. Branden PS. Contraceptive choice and patient compliance - The health care provider's challenge. *J Nurse-Midwifery*. 1998;43:471–82. [PubMed: 9871380]
- [48]. Levine JP. Nondaily hormonal contraception: establishing a fit between product characteristics and patient preferences. *The Journal of family practice*. 2004;53:904–13. [PubMed: 15527729]
- [49]. Scott A, Glasier A. Evidence based contraceptive choices. *Best Pract Res Cl Ob*. 2006;20:665–80.
- [50]. Kalmuss D, Davidson AR, Cushman LF, Heartwell S, Rulin M. Determinants of early implant discontinuation among low-income women. *Family planning perspectives*. 1996;28:256–60. [PubMed: 8959415]
- [51]. Weisman CS, Maccannon DS, Henderson JT, Shortridge E, Orso CL. Contraceptive Counseling in managed care: Preventing unintended pregnancy in adults. *Women's health issues : official publication of the Jacobs Institute of Women's Health*. 2002;12:79–95.

Implications:

Short acting hormonal contraception is widely used, but counseling for these methods often neglects key features. Comprehensive counseling about all methods and their individual features can improve contraceptive selection and use.

Table 1.

Characteristics of patient participants and method chosen, by method preference before visit (n=342)

	Total N (% total population)	Preference for Pill N (%)	Preference for Patch N (%)	Preference for Ring N (%)	Preference for non-CHC ^a N (%)	No preference N (%)
	342 (100)	113 (33)	11 (3)	28 (8)	127 (37)	63 (18)
Mean age (years, SD)	27 (7)	26 (7)	28 (9)	27 (7)	28 (7)	27 (6)
Parous	112 (33)	25 (22)*	7 (64)*	8 (29)*	49 (39)*	23 (37)*
Race/ethnicity						
White	158 (46)	53 (47)	4 (36)	11 (39)	62 (49)	28 (44)
African American	98 (29)	30 (27)	6 (55)	9 (32)	34 (27)	19 (30)
Latina	86 (25)	30 (27)	1 (9)	8 (29)	31 (24)	16 (25)
Education						
<High school	91 (27)	32 (28)	3 (27)	3 (11)	41 (32)	12 (19)
Some college	130 (38)	41 (37)	4 (36)	15 (54)	38 (30)	31 (49)
College grad	121 (35)	39 (35)	4 (36)	10 (36)	48 (38)	20 (32)
Parental education						
<High school	126 (37)	40 (35)	3 (27)	13 (46)	48 (38)	22 (35)
Some college	87 (26)	35 (31)	6 (55)	2 (7)	28 (22)	16 (25)
College grad	128 (38)	38 (34)	2 (18)	13 (46)	50 (40)	25 (40)
Income in % FPL						
<100	145 (42)	42 (37)	8 (73)	9 (32)	58 (46)	28 (44)
101–200	71 (21)	24 (21)	2 (18)	5 (18)	25 (20)	15 (24)
>200	126 (37)	47 (42)	1 (9)	14 (50)	44 (35)	20 (32)
Method chosen^{b,c,d}						
Pill	119 (35)	88 (78)***	4 (36)***	2 (7)***	12 (10)***	13 (21)***
Ring	47 (14)	5 (4)***	0	21 (75)***	12 (10)***	9 (14)***
Patch	7 (2)	0	1 (9)**	0	1 (1)**	5 (8)**
non-CHC method	166 (49)	20 (18)***	6 (55)***	5 (18)***	101 (80)***	34 (54)***

* p<0.05

** p<0.01

*** p<0.001 (Reference group: preference for pill)

^aIncludes IUD, implant, injectable contraception (DMPA), condoms, other (sterilization, diaphragm, cervical cap)^bSample of 341 due to missing post-visit data from one participant^cTest of significance using chi-square for choosing each method vs. choosing any other method, by preference^dTotal does not equal to 100 due to method choices not listed

Abbreviations: FPL (federal poverty level)

Table 2:

Methods included in counseling, by pre-visit method preference (n=342)

		Method preference (N, %)						P-value
		Total	Pill	Patch	Ring	non-CHC	None	
		342 (100)	113 (33)	11 (3)	28 (8)	127 (37)	63 (18)	
Method mentioned*	Pill	310 (91)	112 (99)	10 (91)	26 (93)	103 (81)	59 (94)	<0.001
	Patch	157 (46)	47 (42)	9 (82)	15 (54)	48 (38)	38 (63)	<0.01
	Ring	206 (60)	65 (58)	8 (73)	26 (93)	62 (49)	45 (71)	<0.001
	No CHC method	27 (8)	1 (1)	1 (4)	1 (9)	22 (17)	2 (3)	<0.001
Number of CHC methods mentioned**	1 CHC method	95 (28)	40 (35)	1 (9)	2 (7)	39 (31)	13 (21)	<0.001
	2 CHC methods	82 (24)	32 (28)	1 (9)	10 (36)	24 (19)	15 (24)	<0.001
	3 CHC methods	138 (40)	40 (35)	8 (73)	15 (54)	42 (33)	33 (52)	<0.01

* Test of significance in each preference group using Fisher's exact test for having each method mentioned vs. not having each method mentioned

** Test of significance in each preference group using Fisher's exact test for having each number of methods mentioned vs. any other number of methods mentioned

Table 3.

Counseling about side effects with the chosen methods, by CHC method chosen at visit (n=173)

	Total (N,%)	Chose Pill (N,%)	Chose Patch (N,%)	Chose Ring (N,%)
Total (N, % of population choosing CHC method)	173 (100)	119 (69)	7 (4)	47 (27)
Mentioned by provider or patient during visit...?^a				
Side effects				
Spotting/irregular bleeding	58 (35)	46 (39)	2 (29)	10 (21)
Nausea	33 (24)	28 (24)	1 (14)	4 (9)
Breast changes (tenderness, swelling)	25 (16)	17 (14)	3 (43)*	5 (11)
Mood changes/depression	40 (22)	32 (27)	1 (14)	7 (15)*
Weight gain	15 (9)	13 (11)	1 (14)	1 (2)*
Application site skin irritation	<i>b</i>	<i>b</i>	4 (57)	<i>b</i>
Benefits of method use				
Lighter/less painful periods	41 (35)	25 (21)	4 (57)	12 (26)
Regular periods	26 (17)	13 (11)	3 (43)*	10 (21)*
Decreased acne	35 (21)	29 (24)	0	6 (13)

* p<0.05, test of significance using Fisher's exact test for having each side effect mentioned for a particular method chosen vs. having each side effect mentioned in patients who chose pills

^a Add up to >100 due to non-mutually exclusive incidence

^b Not applicable

Table 4.

Counseling on logistics of use, by CHC method chosen after visit (n=173)

	Total (N, %)	Chose Pill (N, %)	Chose Patch (N, %)	Chose Ring (N, %)
Total (N, % of population choosing CHC method)	173 (100)	119 (69)	7 (4)	47 (27)
Mentioned by provider or patient during visit...? ^a				
Patient's ability to use method correctly	127(73)	77 (65)	6 (86)	23 (49)
Importance of starting hormones on time after hormone-free week	27 (16)	16 (13)	2 (29)	9 (19)
What to do if dose missed	50 (29)	40 (34)	1 (14)	9 (19) *
Need for backup use due to lag in efficacy after initiation	92 (53)	62 (52)	3 (43)	27 (57)
Plan for follow-up or refills	150 (87)	102 (86)	5 (71)	43 (91)
What to do if dissatisfied with method	114 (66)	79 (66)	5 (71)	30 (64)
What to do if patch falls off	<i>b</i>	<i>b</i>	2 (29)	<i>b</i>
What to do if ring falls out	<i>b</i>	<i>b</i>	<i>b</i>	17 (36)
Extending ring use past 28 days	<i>b</i>	<i>b</i>	<i>b</i>	15 (32)
Continuous cycling	<i>b</i>	<i>b</i>	<i>b</i>	14 (30)
Discussion of partner feeling ring	<i>b</i>	<i>b</i>	<i>b</i>	25 (53)

* p<0.05, test of significance using Fisher's exact test for having each logistic of use topic mentioned for a particular method chosen vs. having each logistic of use topic mentioned in patients who chose pills

^a Add up to >100 due to non-mutually exclusive incidence

^b Not applicable