

My Contraceptive Choice: A Decision Support Tool for College Women

Molly Redman^{a,b}, Jenny Brian^b, Dongwen Wang^a

^a College of Health Solutions, Arizona State University, Tempe, AZ, USA

^b Barrett Honors College, Arizona State University, Tempe, AZ, USA

Abstract

We developed an online decision aid, My Contraceptive Choice (MCC), for college women to select the appropriate birth control methods. MCC consists of a short quiz, customized recommendations, and educational resources. Evaluations from a focus group, an online survey, and test cases showed that the tool is accurate, usable, and useful. Future work is required to further improve MCC's compliance with user needs/preferences and to include additional resources to make it more useful.

Keywords:

Contraception, computer-assisted decision making, user-centered design

Introduction

Contraceptive method selection is vital to helping young women maintain their health and preventing unintended pregnancy [1]. The lack of knowledge and awareness of highly efficient methods results in low adoption rates and misuse of these methods, especially in young women [1].

Beyond pregnancy prevention, certain contraceptive methods provide additional health benefits such as acne control and hormone regulation [2]. However, these methods may have side effects such as anxiety, depression, and hypertension due to hormones. Other contraceptive methods may interfere with specific medical conditions, such as treatment of sexually transmitted infections (STIs) [2].

Planned Parenthood [3] and Bedsider [4] are two web-based decision aids to help the user select a contraceptive method. Our study showed that each of these tools had its own usability flaws. In addition, the quiz by Planned Parenthood did not consistently produce results that accurately reflected a user's needs and preferences. Here we report a study to develop and evaluate a decision aid, My Contraceptive Choice (MCC), for college women to select appropriate birth control methods.

Methods

This study consisted of two major phases – development and evaluation. The development phase involved a literature review, an assessment of existing decision aids, and a development focus group. The evaluation of the MCC tool was with a survey, an evaluation focus group, and a set of test cases.

We sought potential participants for both of the focus groups and the survey through the student email lists at the Arizona

State University (ASU), obtained consent, and recruited females who were between 18 and 24 years old and attending a university or college. Due to the COVID-19 pandemic, both focus groups were conducted via Zoom. The ASU IRB approved this study.

During the development focus group, we asked questions on contraceptive selection process. We then designed the MCC tool using this feedback, along with information obtained from a literature review, CDC guidelines, and assessment of the existing contraceptive decision aids. We developed a numerical scoring system to generate customized recommendations based on user input.

For the evaluation survey, we examined users' satisfaction with the customized recommendations and the overall experience using the MCC tool. During the evaluation focus group, we asked similar questions, and requested that the participants compare the MCC tool to the two existing decision aids. As the last step of the evaluation, we developed simulated test cases to enumerate all possible combinations of decision factors to provide a quantitative measure on the recommendations generated by the system.

Results

The MCC tool is organized with a quiz section and a results section. The quiz section gathers user input on their preferences, which are decision factors deemed most important by the feedback from the development focus group. The remaining pages of the quiz determine user needs based on the user's past experiences with specific contraceptive methods, the user's medical history, and additional factors.

We developed a numerical scoring system to assign points to each contraceptive method based on a user's answers to the questions in the quiz portion. As the user moves from one question to the next, the scores for each contraceptive method are added up. Upon completion of user data collection, the three contraceptive methods with the top scores are recommended to the users.

After the user completes the quiz, he/she is directed to the results section of the MCC tool. The first page of this section consists of a matrix that allows for side by side comparison of all contraceptive methods in the MCC tool based on various decision factors, with the recommended methods highlighted. The second page of the results section provides in-depth text explanations for the top three recommended methods. Additional information resources such as the locations of nearby clinics or online stores are presented at the bottom of the page. Partial screenshots of the MCC tool are shown in Figure 1.

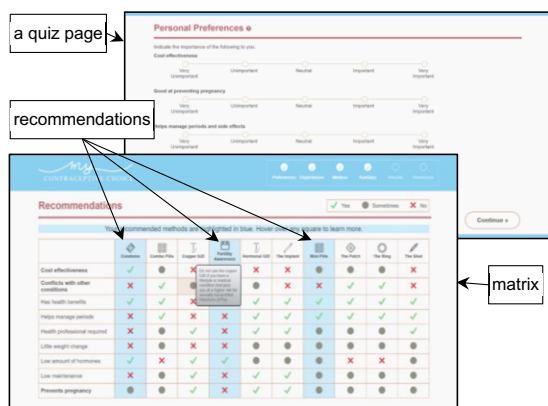


Figure 1 – Partial screenshots of the MCC tool.

To evaluate the MCC tool, we surveyed 150 college females between the ages of 18 and 24 years old via Google Forms. Among them, 130 (80.7%) believed that the recommendations could provide effective assistance to select a birth control method. Furthermore, 136 (90.0%) believed that the tool was easy to navigate.

The evaluation focus group reconfirmed the positive responses from the survey users, specifically expressing satisfaction with the results section. The majority of the participants stated that they received better recommendations from the MCC tool compared to the Planned Parenthood quiz. Additionally, the majority of the participants stated that the MCC tool was easier to navigate and had preferred usability features compared to the Bedsider tool. Finally, the participants agreed that MCC, compared to the other tools, better addressed the concerns specific to the target population, such as the influence of the contraceptive methods on weight.

For further evaluation, we created 180 test cases through enumeration of all possible combinations of decision factors for MCC. Each test case produced 3 methods for recommendation, with a total of 540 methods generated. We evaluated the test cases for adherence to user preferences and user needs. The user preferences included cost effectiveness, pregnancy prevention, management of periods, and low weight gain. The user needs included the level of hormones and the past experiences.

The initial evaluation showed that the MCC tool adhered to user preferences for 216 of the 540 (40.0%) test cases and adhered to user needs for 348 of the 540 (64.5%) test cases. We found three reasons that contributed to the low accuracy rate: (i) a bug in the code; (ii) no process for handling methods with tied scores; and (iii) certain combinations of the preferences could not be fulfilled by any method presented in the MCC tool. After we addressed these issues, the MCC tool's rate of adherence to user preferences improved to 71.7%, and the rate of adherence to user needs improved to 72.0%.

Discussions and Conclusions

The MCC tool leveraged an effective hybrid design to adopt the strengths of the two existing decision aids. It also included many new features such as highlighting the recommendations within the matrix to allow for easy comparison. Additionally, the MCC tool focused on factors especially important to the target population of college women, such as contraception's impact on weight, which were not available in the other tools.

The test cases allowed for identification of potential limitations in the MCC tool. Addressing these limitations increased the accuracy of the tool and generated better recommendations for the user.

The evaluation has shown that the MCC tool is a user-friendly resource to assist the selection of appropriate contraceptive methods that can reasonably address user needs/preferences and connect the user to local or online providers of contraceptive services or products. Future work is required to further improve the compliance with user needs/preferences and to expand the resources section to make the tool more useful.

Acknowledgements

The Barrett Honors College at ASU provided funding support for this honors thesis research by the first author. We thank the students who participated in the focus groups and survey for their contributions to this study.

References

- [1] J. Melo, M. Peters, S. Teal, and M. Guiahi, Adolescent and Young Women's Contraceptive Decision-Making Processes: Choosing "The Best Method for Her," *J Pediatr Adolesc Gynecol.* 28 (2015) 224–228. doi:10.1016/j.jpag.2014.08.001.
- [2] Birth Control Methods & Options | Types of Birth Control, (n.d.). <https://www.plannedparenthood.org/learn/birth-control> (accessed February 27, 2021).
- [3] PPFA Decision Making, (n.d.). https://tools.plannedparenthood.org/bc/birth_control_quiz (accessed February 24, 2021).
- [4] Compare Birth Control Methods, *Bedsider.* (n.d.). <https://www.bedsider.org/methods/matrix> (accessed February 24, 2021).

Address for correspondence

For more information, contact Molly Redman at mredman3@asu.edu.