Development of a Decision Aid for Women Choosing a Method of Birth Control

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The choice of a contraceptive method is complex and difficult. This study identifies issues of concern for women in selecting a birth control method, examines the accuracy of a self-administered questionnaire based upon these outcomes in predicting actual use, and in a preliminary fashion evaluates the usefulness of such an instrument as a decision aid.

A questionnaire was designed to assess women's perceptions of the likelihood of each issue of concern for four birth control methods—oral contraceptives, intrauterine device (IUD), diaphragm, and foam or condoms—as well as the relative value of each issue. It was then tested among a convenience sample of 106 women. A weighted score was constructed by combining likelihood and value estimates for each contraceptive method. The method with the highest score was compared with actual contraceptive use and the intention to use such methods in the future.

Positive predictive values were highest for pill use (83 percent) and lowest for IUD use (40 percent). While 65 percent of the sample were satisfied with their current method, 60 percent also found the questionnaire helpful. This attitude was most prevalent among younger, unmarried women. A decision aid for contraceptive decision making appears to be reasonably predictive of actual contraceptive use and helpful in thinking about the choice of a birth control method.

Choosing a birth control method is a common experience for most women. While this decision is clearly important, the process by which a contraceptive choice is made has received little attention in the medical literature. In lay publications[1,2] and in clinical settings,[3] information regarding the use and effectiveness of each method is usually presented together with a discussion of the advantages and disadvantages of their usage. Such an approach fails to link the acquisition of information with the subsequent contraceptive decision. Thus, even in the best of circumstances, a woman is left with the complex task of integrating and weighing that information in light of her own situ-

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ation and values in arriving at a final choice.

Choosing a birth control method is an ideal situation for applying the principles of decision analysis. Decision analysis attempts to promote better decisions while helping to clarify the beliefs and values of the decision maker. The selection of a contraceptive method involves complex value considerations. Convenience, risk of side effects, impact on sexuality and relationships, and so on, all are valued to different degrees by different women and must be weighed against each other in arriving at a choice.

In this study, a self-administered questionnaire* was developed to assess the perceptions and values of women toward four contraceptive methods. In this process, it was important to determine the issues of concern for women in their selection of a contraceptive method and then to arrange these in a format that would facilitate a systematic consideration of selected methods of contraception. The accuracy of the instrument subsequently constructed in predicting actual contraceptive use was then evaluated along with its usefulness as a decision aid for a sample of women with a range of contraceptive experience.

Methods

The instrument was developed according to the method cited in an earlier article.[4] In brief, a convenience sample of 23 women having some prior experience with contraception were asked to identify important issues associated with their selection of a contraceptive method together with those methods that they felt should be discussed in contraceptive counseling. In the final questionnaire, each of four methods—the diaphragm, oral contraceptive (pill), intrauterine device (IUD), and foam or condoms—was compared separately with 24 issues relevant to choosing a contraceptive method.

The questionnaire was divided into four sections. The first section assessed the subjective likelihood (probability) that each issue of concern would occur as a result of using each of the four contraceptive methods. The issues were rated on a five-point scale. A second section assessed personal values toward each issue of concern, again on a five-point scale. A third section solicited demographic and contraceptive information. The final section of the instrument assessed the usefulness of the questionnaire to the respondent's thinking about her contraceptive choice.

The weighted score was derived for each contraceptive method by multiplying the likelihood that each issue of concern would be a result if that method were used (section 1, 1 = very unlikely, 5 = very likely) by the value assigned to that issue of concern (section 2, −2 = very bad, 0 = neutral, +2 = very good) and summing the results across the 24 statements for each contraceptive method. The contraceptive method receiving the highest total score was considered the predicted method.

The questionnaire was distributed to a convenience sample of 106 women from a private family practice, a family practice residency program, and a high school physical education class. Whenever possible, permanently sterilized women (ie, by hysterectomy, tubal ligation) were excluded.

Results

As reported previously,[4] the mean age for the sample population was 25.8 years (range, 14 to 45 years). Sixty percent of the women were single, 30 percent were married, and 10 percent were separated or divorced. Sixty percent of the sample had never been pregnant, and 85 percent were currently using a contraceptive method.

Sixty-three percent of the women under the age of 25 years used the pill. IUD, diaphragm, and foam or condoms were most frequently used by women aged 26 to 35 years. Use of the pill, diaphragm, and foam or condoms was most common among single women. The IUD was most frequently used by married women, and tubal ligation was more common among women separated or divorced. Distribution of contraceptive methods by parity was less clear, though the use of all methods, except for IUD and tubal ligation, di-

*Copies of the questionnaire are available upon request from the author.

Table 1. Comparison of Predicted and Actual Contraceptive Use

Predicted	Actual Use: Pill	IUD	Diaphragm	Foam or Condoms	Row Total No. (%)
Pill	20	0	2	2	24 (34.3)
IUD	7	6	2	0	15 (21.4)
Diaphragm	4	0	12	1	17 (24.3)
Foam or condoms	4	0	2	8	14 (20.0)
Column total	35	6	18	11	70 (100.0)
(Percentage)	(50.0)	(8.6)	(25.7)	(15.7)	

minished with increased parity. Pill and diaphragm use was most common among women with no children.

Sixty-five percent of the women sampled were satisfied with their current method, and only 20 percent stated that they were thinking of changing to another method. IUD users and those having a tubal ligation were most satisfied with their methods, while pill and diaphragm users were slightly less satisfied with their methods. Foam or condom users appeared to be least satisfied with their method. Respondents appeared to be quite satisfied with their chosen method regardless of their age, marital status, or parity.

The contraceptive method with the highest weighted score (the predicted method) was selected for each subject and compared with the actual contraceptive used (Table 1) to assess the predictive accuracy of the instrument. The 36 individuals who used methods other than the four included on the questionnaire (ie, tubal ligation, vasectomy, hysterectomy, etc) were excluded from these analyses.

Table 2 lists the sensitivity, specificity, and positive predictive value for each of the four methods. The sensitivity of the instrument reflects its ability to correctly identify actual contraceptive use by comparing each woman's predicted and actual method. Sensitivity was highest for IUD users (100 percent) and lowest for pill users (57 percent) and varied inversely with the prevalence of actual contraceptive use in the sample. Specificity refers to the proportion of women not using a given contraceptive method who were predicted by the instrument to not use that method. The specificity was high for all four methods. The positive predictive value reflects the ability of the instrument to predict actual contraceptive use given only the prevalence of use of each method in the sample population. Here, prediction was greatest for the pill (83 percent) and lowest for IUD users (40 percent).

Predicted use of all methods tended to be greater than actual contraceptive use (overprediction) for women aged 14 to 25 years and 36 to 45 years and was less than actual use (underprediction) for those in the 26- to 35-year age group. The instrument more commonly overpredicted use of all methods for single women, underpredicted for married and divorced women, and more closely approximated actual use among separated or divorced women. By parity, overprediction was found for para 0 and para 3 women, while underprediction was seen for the rest. Closest approximation of predicted and actual use was found among primiparous women.

Predictive accuracy was also assessed with regard to the self-reported likelihood of future use of each contraceptive method (Table 3). Again, sensitivity was highest for the IUD and foam or condoms (62 and 61 percent, respectively) and lowest for the diaphragm (36 percent). The positive predictive value again was highest for the pill (86 percent) and lowest for the IUD (31 percent).

Overall, more than one half the respondents (60 percent) reported that the instrument was helpful,

Table 2. Predictive Accuracy of Instrument

Method	Percentage of Actual Use in Sample	Sensitivity	Specificity	Predictive Value (+)
IUD	8.6	1.0	.86	.40
Pill	50.0	0.57	.89	.83
Diaphragm	25.7	0.67	.89	.71
Foam or condoms	15.7	0.73	.95	.57
Mean		0.74	.90	.63

Table 3. Summary of Prediction of Instrument With Regard to Likelihood of Future Use of Contraceptive Method

Self-Reported Method Likely or Very Likely to Use	Sensitivity	Specificity	Predictive Value (+)
IUD	.62	.79	.31
Pill	.46	.91	.86
Diaphragm	.36	.88	.68
Foam or condoms	.61	.93	.77
Mean	.51	.88	.65

and one third felt that it had clarified their thinking with regard to their chosen contraceptive method. The degree of helpfulness was inversely related to age. Single, nonparous women were most likely to find the instrument helpful, and these tended to be younger aged women.

While it was expected that helpfulness would be related to the degree of dissatisfaction with their current method, perceived helpfulness was highest among those satisfied with their current method. Those very satisfied with their method (older, married women with two or more children), however, did not find the exercise helpful. Women having a tubal ligation followed by those using an IUD tended to be both most satisfied with their method and least aided by such an instrument.

Discussion

Selection of a contraceptive method appears to be a dynamic process depending on those variables that relate to a woman's lifestyle and personal situation. While pill use was most prevalent in this study, more permanent forms of birth control were common among older, married, and parous women.

Using a weighted scoring method, the instrument devised in this study appears to predict actual contraceptive use reasonably well. The positive predictive values ranged from 40 to 83 percent for the four contraceptive methods included in the questionnaire. When prediction is measured by positive predictive value, the instrument was most accurate for pill and diaphragm

use. The low predictive accuracy with regard to the IUD and foam or condoms may reflect the instability of the instrument resulting from the small number of users of these methods in the sample. The likelihood of future use of each method provided a global estimate of the subject's attitude toward each contraceptive method. Here the predictive accuracy was highest for the pill. Prediction was best for older women (aged 36 to 45 years), those separated or divorced, and women with one child. This finding is not unexpected, since these women presumably have used several contraceptive methods in the past and have arrived (perhaps by default) at a relatively stable choice.

A hypothesis of this study was that the quesionnaire can help to resolve a complex and difficult decision by making explicit the underlying perceptions and values of the decision maker. The findings of this study suggest that a decision aid may indeed be useful for contraceptive decision making. That more than one half of the respondents were satisfied with their current method and at the same time found the instrument of some help is encouraging. Most of those who found the instrument useful were young, unmarried, nonparous women. These women have less experience with a variety of birth control methods and consequently have a greater need for contraceptive counseling than older women. One third of the respondents felt that the instrument had clarified their thinking. A future study should focus on young women seeking their first contraceptive method.

A number of methodologic problems were encountered with regard to the predictive accuracy of the instrument. First, small differences between the weighted expected utility scores for each method frequently made selection of the highest score difficult. Decision analysis holds that only this highest score is indicative of a "best choice" and does not address the differences between scores. Kassirer and Pauker[5] have identified these small differences as clinical "toss-ups," and their relevance to the present study cannot be underestimated.

Second, it should be noted that the majority of subjects were currently using a birth control method of their choice. As a rule, such people will emphasize the positive and discount negative features of decisions they have already made. Prediction should then be consistent with this actual contraceptive use. The best use of a decision aid would certainly be among those women wishing to choose a birth control method for the first time. In this situation, the above problem would not exist and prediction should reflect the subsequent method chosen. By design, the present study was a pilot focusing on preliminary validation among an admittedly biased cohort of contraceptive users. A follow-up to this study will compare the questionnaire-derived method of choice with the method that is actually chosen by first-time contraceptive users.

Third, the distribution of contraceptive methods used in the sample population reveals few users of the IUD and foam or condoms. Since positive predictive values are dependent on the use prevalence in the population, an assessment of predictive accuracy using such small numbers in a sample of convenience must be guarded at best.

The use of such a decision aid may apply to a wide variety of real-life settings. In specialized contraceptive counseling (Planned Parenthood, for instance), such an aid could be used after the risks and benefits of each method had been presented. In clinical settings, the information provided by the completion of such a questionnaire could well serve as a focal point for an exploration of perceptions and values relative to such a decision. The need for additional information may also be identified through such a formalized process. If and when such an instrument can accomplish any of these goals, its development will have been worthwhile.

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