Young Women's Contraceptive Microbicide Preferences: Associations with Contraceptive Behavior and Sexual Relationship Characteristics

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Abstract:

CONTEXT

In time, microbicides may provide women with dual prevention against pregnancy and STDs. Although several microbicide dimensions have been evaluated, little is known about women's preferences for contraceptive microbicides and correlates of these preferences.

METHODS

Acceptability of a hypothetical contraceptive microbicide cream or jelly was examined among a clinic-based sample of 266 women in Indianapolis from 2004 (when participants were aged 14–22) to 2008. Group conjoint analyses and individual conjoint analyses were used to compare preferences with respect to four microbicide dimensions: contraceptive ability, efficacy in relation to condoms, timing of use and texture. Pearson's product moment correlations were used to examine the relationship between preferences for a contraceptive microbicide and selected characteristics of the women.

RESULTS

Overall, the top-rated microbicide dimensions were efficacy in relation to that of condoms and contraceptive ability (importance scores, 40.0 and 35.4 out of 100.0, respectively). When all dimension levels were compared, contraceptive ability was the most strongly preferred (part-worth utility score, 8.9), and lower efficacy than that of condoms was the least strongly preferred (−11.9). Preference for contraceptive microbicides was positively associated with current contraceptive use, sexual agency, partner communication, commitment to avoiding pregnancy

and perceived partner agreement about avoiding pregnancy (coefficients, 0.07–0.18). It was negatively associated with current or past nonuse of contraceptives, seeking pregnancy and perceived partner agreement about seeking pregnancy (−0.08 to −0.14).

CONCLUSIONS

Microbicides with dual prevention properties may be attractive to young women. Microbicide development and subsequent clinical trials should incorporate contraceptive microbicides.

Keywords: Reproductive Health | Sexual Health | Contraceptives | Microbicide | Young women | Pregnancy

Article:

The sexual and reproductive health of adolescents and young adults continues to be a significant public health issue. In the United States, nearly one out of three females will become pregnant by age 20.[1] Overall, 49% of pregnancies in the United States are unintended,[2] and 51% of the two million publicly funded births in 2006 resulted from unintended pregnancies.[3] Unintended pregnancies led to approximately $11.1 billion in direct medical costs in 2006.[3] Furthermore, unintended pregnancies are not the only potential negative outcome of vaginal intercourse. Every year, approximately 19 million new cases of STDs are reported, resulting in an estimated $15.9 billion in annual health care costs.[4] Among individuals aged 15–24, women are disproportionately burdened by both STDs and the long-term health consequences of infection.[4]

Interest has been increasing in developing female--initiated technologies as a way to address some of the potential medical and psychosocial costs associated with adolescent sexual behavior. Past research highlights the worldwide need for and the feasibility of developing dual method technologies: products that could offer protection from STDs and unintended pregnancy.[5, 6] Vaginal microbicides represent one such potential product category.[7] To date, vaginal microbicide development has focused on STD prevention—primarily, the prevention of HIV transmission during sex—and a clinical trial conducted from 2007 to 2010 offered promising results.[8, 9] In a randomized, placebo-controlled study among South African women (CAPRISA 004), a pericoital, tenofovir-based microbicide gel reduced HIV infection by an estimated 39% overall and by 54% in women with the highest rates of adherence to the microbicide regimen.[1][9] The product also had an unanticipated outcome of reducing herpes simplex virus type 2 transmission by 51%.[10] However, enthusiasm for the success of a tenofovir-based microbicide was reduced by the subsequent VOICE clinical trial, when the study arm assessing daily dosage of a tenofovir gel was suspended because of ineffectiveness.[11]

Adherence to microbicide regimens continues to present challenges in clinical trials, suggesting that the pro-ducts' potential effectiveness would be limited. Adherence appears to be influenced by microbicide dimensions such as timing of use in relation to sexual activity and whether the

product has lubricating qualities that increase sexual comfort and pleasure.[12-14] Another potential factor is whether a microbicide offers dual protection: Limited research has suggested that young women value contraceptive properties of microbicides.[15] However, little is known about whether these preferences vary over time or are influenced by relationship characteristics and contraceptive behaviors.

Potential contraceptive microbicides, like other dual prevention methods, must be considered within the context of sexual relationships, because such relationships are associated with young women's utilization of contraceptive and disease prevention methods.[16] For example, male partners and relationship dynamics are associated with diaphragm,[17] condom[16, 18] and microbicide[19, 20] use. Individuals in longer term and closer relationships tend to use barrier methods less than individuals in casual relationships, because their perceived risk of STDs is lower and their use of hormonal contraceptives is greater.[7, 21] Additionally, sex partner communication and young women's relationship power are positively associated with contraceptive practices within relationships.[22, 23] These considerations suggest that sex partner and relationship-specific characteristics may be important as women evaluate microbicide acceptability.

Using longitudinal data from a cohort of adolescent and young adult women, this study had three goals: to determine the importance of contraceptive ability relative to that of other microbicide dimensions; compare the acceptability of a hypothetical contraceptive microbicide with that of noncontraceptive ones; and examine associations between preferences for a hypothetical contraceptive microbicide and sexual relationship characteristics.

Methods

Our study uses data from a 10-year longitudinal investigation of young women's sexual health and sexual behaviors, initiated in 1999[24]; these data were collected between 2004 and 2008. The larger study recruited nonpregnant, English-speaking, young women attending three primary care clinics in Indianapolis. The clinics serve areas characterized by high rates of STDs and early childbearing, and low rates of HIV.[4, 25, 26] Sexual experience and activity were not enrollment criteria, and participants who became pregnant during the study were permitted to continue. Eligible patients were approached during their clinic visits and informed of the tasks involved in the longitudinal study (i.e., that they would be asked to keep daily diaries, collect specimens using vaginal swabs, undergo STD testing and participate in structured quarterly interviews). Most frequently, enrollment procedures were completed at separately scheduled appointments, approximately two weeks after initial consent. All study protocols were approved by the Indiana University School of Medicine's institutional review board; written informed consent was obtained from each participant and, for minor adolescents, from parents.

Data were obtained through structured quarterly interviews that lasted approximately 25 minutes. As we were interested in longitudinal microbicide preferences, only participants who contributed

two or more quarterly visits were included in the present study. On average, women in our sample contributed 8.2 quarterly visits (standard deviation, 3.7) across approximately four years. Although participants could list up to five sex partners in each interview, they generally (i.e., at 85% of visits) reported only one partner; therefore, we included data only from the most recent partner.

Measures

Contraceptive microbicide preferences

Participants were informed that microbicides are creams or jellies that may prevent, but not treat or cure, STDs and that microbicides were currently under development and not commercially available. Women were also told that microbicides work in a similar manner to spermicides (described as cream or jellies that have to be placed into the vagina every time sex occurs to kill sperm) and that to prevent STDs, they must be used every time a person has sex. Participants were asked to imagine that microbicides were available for the same cost as condoms.[27] Next, they were presented with scenarios describing nine hypothetical microbicides, each defined by a combination of four multilevel dimensions: contraceptive ability ("prevents pregnancy" or "doesn't prevent pregnancy"), STD prevention efficacy relative to that of condoms ("doesn't work as well as condoms," "works almost as well as condoms" or "works as well as condoms"), timing of use ("one hour before sex," "5–10 minutes before sex" or "5–10 minutes after sex") and texture ("feels greasy" or "doesn't feel greasy"). For example, one scenario said, "This microbicide is used 5–10 minutes before sex, it feels greasy, it prevents STDs and pregnancy, and it works almost as well as condoms."

Given that two dimensions had three levels and two had two levels, assessment of all possible combinations of factors would have required administration of 36 questions, which would have been quite burdensome to respondents. To make the task more manageable for respondents,[28] we used SPSS 17 to derive a fractional factorial design that reduced the number of items to nine—six contraceptive microbicide scenarios and three noncontraceptive ones (box). The fractional factorial design also allows for examination of the main effects of each dimension. Scenarios were presented to participants in a different order at each quarterly visit to limit the possible influence of ordering effects. Participants were asked to rate their likelihood of using each hypothetical microbicide on a probability scale ranging from 0 ("I would never try this microbicide") to 100 ("I would definitely try this microbicide") in increments of 10. We then developed and evaluated two mean composite scores, contraceptive microbicide preferences (using the six contraceptive scenarios) and -noncontraceptive microbicide preferences (using the three noncontraceptive scenarios), to determine which scenarios were most preferred by participants.

Use of contraceptives

At each quarterly visit, participants were asked whether they had used each of the following contraceptive methods in the past 2–3 months: condom, spermicide, pill, injectable, patch, IUD, tubal ligation, emergency contraception, diaphragm, vaginal ring, withdrawal and rhythm. Reported use of any particular method led to a follow-up question asking if the participant was currently using that method. (The questionnaire did not include follow-up questions on emergency contraception, tubal ligation or withdrawal.) We used responses to these items to create variables indicating the number of contraceptives used in the recent past and the number currently used, as well as no use in the recent past and no current use.

Commitment to avoiding pregnancy

Participants were asked the extent to which they agreed with one statement: "I am very committed to not getting pregnant at this time in my life." Responses were on a Likert-type scale ranging from 1 ("strongly disagree") to 4 ("strongly agree").

Pregnancy desire

Participants were asked how important it was to have sex with their partner because they were trying to get pregnant and because their partner wanted them to get pregnant. Responses were scored on a three-point scale (1="not important"; 3="important"). Through use of discrepancy analyses, perceived partner values were subtracted from participant values. Resulting scores were then recoded for ease of interpretation. Scores of −2 to −1 were recoded to signify that the participant desired pregnancy. Scores of 1 and 2 were recoded to denote that the partner desired pregnancy. Scores of 0 indicated that the participant and her partner agreed on pregnancy intention. We then used these data to develop two dichotomous items, one indicating that the couple agreed on avoiding pregnancy, the other that they agreed on seeking pregnancy.

Sex partner communication

This scale was an average composite score of three items, which asked the extent to which young women agreed that they felt comfortable speaking to their partner about sex, that it was easy to talk to their partner about using condoms or dental dams, and that it was easy to talk to their partner about using birth control (Cronbach's alpha, 0.81). All items were assessed on a four-point Likert-type scale (1="strongly disagree"; 4="strongly agree").

Sexual agency

To assess young women's perceptions of relationship power and control, we developed a scale by combining responses to three items: "It's easy for me to say no if I don't want to have sex," "It is easy for him to take advantage of me" and "Sometimes things just get out of control with him." Responses were on a four-point Likert-type scale (1="strongly disagree"; 4="strongly agree"). The last two items were recoded prior to inclusion in the scale to ensure that all items were in the same direction (Cronbach's alpha, 0.76).

Sexual behavior

We also examined five sexual behavior variables, each measured by one question: participants' age at first sex, lifetime number of sex partners,[2] number of partners in the past 2–3 months, number of episodes of sex in the past 2–3 months and condom use during last sex.

Characteristics of nine hypothetical microbicides described to participants in a study of young women's microbicide preferences

Timing of use	Contraceptive ability	Texture	STD prevention efficacy compared with that of condoms
5–10 minutes after sex	No	Greasy	Not as good
1 hour before sex	No	Not greasy	Almost as good
5–10 minutes before sex	No	Greasy	As good
1 hour before sex	Yes	Greasy	Not as good
5–10 minutes before sex	Yes	Not greasy	Not as good
5–10 minutes before sex	Yes	Greasy	Almost as good
1 hour before sex	Yes	Greasy	As good
5–10 minutes after sex	Yes	Greasy	Almost as good
5–10 minutes after sex	Yes	Not greasy	As good

Analyses

The main variable of interest, contraceptive microbicide preferences, was evaluated through use of conjoint analysis, a regression-based technique that was originally developed in marketing research but has gained traction in assessing heath care preferences.[15, 29, 30]Conjoint analysis evaluates the acceptability of a product on the basis of specific features of that product. We conducted two types of conjoint analyses to examine longitudinal preferences for contraceptive

microbicides in different ways. First, we employed full-profile, group conjoint analysis to calculate part-worth utility scores, which reflect relative preferences for each microbicide characteristic. These scores indicate, for the entire sample across all quarterly visits, the preference for each level of each microbicide dimension relative to the preference for all other dimensions and levels. For example, they indicate preferences for both a microbicide's ability to prevent pregnancy and its inability to prevent pregnancy relative to preferences for all other characteristics.

Part-worth utility scores sum to 0 for each dimension; the more that respondents distinguished among levels, the wider the range of scores. For instance, if a contraceptive microbicide was strongly preferred relative to a noncontraceptive one, the contraceptive microbicide would have a high positive part-worth utility score, and the -noncontraceptive one would have an equally strong but negative part-worth utility score. For this study, we defined part-worth utility scores ranging from 0.0 to 3.4 (whether positive or negative) as denoting a low preference, 3.5–6.0 as signifying a moderate preference and 6.1 or more as indicating a strong preference.

We then calculated importance scores, which reflect the degree to which each microbicide dimension influenced ratings of the nine scenarios. Importance scores were calculated by dividing the range of part-worth utility scores for a particular dimension by the sum of all part-worth utility scores across all four dimensions. The sum of importance scores across dimensions always equals 100.

Individual conjoint analyses were then conducted with contraceptive ability part-worth utility scores to evaluate each participant's preferences for -contraceptive -microbicides at each quarterly visit. As participants' -interest in using contraceptive microbicides could be affected by a number of variables (e.g., relationship length), individual part-worth utility scores were lagged within participant and within sexual partnership at each quarterly visit. This enabled us to examine individual preferences for contraceptive microbicides while controlling for previous -partner-specific behavior at all quarterly visits. Thus, our unit of analysis was quarterly visit, rather than participant. We also used our individual part-worth utility scores to explore if contraceptive microbicide preferences exceeded noncontraceptive microbicide preferences within our sample.

Finally, we examined Pearson's product–moment correlations to investigate the relationship between contraceptive microbicide preferences and contraceptive behaviors, pregnancy desire and sexual relationship experiences.

Results

Participant Characteristics

A total of 266 women aged 14–22 (mean, 17.3) in 2004 provided responses across 1,238 quarterly visits (Table 1). Of these women, 89% were black, 7% were white, 3% were biracial,

and the rest were Asian or Hispanic. On average, participants had first had vaginal sex at 14 years of age and had had a total of six partners. In the past 2–3 months, young women had had an average of one sexual partner and had engaged in sex 15 times; 40% of those with sexual experience had used a condom during their last sexual encounter (not shown).

Table 1. Selected characteristics of participants and their quarterly visits in a longitudinal study of young women's microbicide preferences, Indianapolis, 2004–2008

Characteristic	% or mean
PARTICIPANTS	(N=266)
Demographic/sexual behavior	
Race/ethnicity (%)	
Black	89.0
White	7.0
Biracial	3.0
Hispanic	0.5
Asian	0.5
Age in 2004 (range, 14–22)	17.3 (2.0)
Age at first sex (range, 10–18)[a]	14.5 (1.5)
Lifetime no. of partners (range, 0–>30)	6.4 (5.2)
Recent no. of partners (range, 0–5)[b]	1.2 (0.5)
No. of recent episodes of sex (range, 0–400)[b]	15.3 (24.6)
Contraceptive/relationship	
No. of contraceptives used in the recent past (range, 0–6)[b]	1.6 (1.1)
No. of contraceptives currently used (range, 0–4)	1.1 (0.9)
Commitment to avoiding pregnancy (range, 1–4)	3.4 (0.8)
Sexual partner communication (range, 1–4)	3.4 (0.6)
Sexual agency (range, 1–4)	3.5 (0.5)

QUARTERLY VISITS	(N=1,238)
Contraceptive/relationship (%)	
No recent past contraceptive use[b]	17.3
No current contraceptive use	26.6
Participant desires pregnancy	1.2
Partner desires pregnancy[c]	9.7
Couple agree on pregnancy intention[c]	86.5[d]
Couple agree on avoiding pregnancy[c]	81.5
Couple agree on seeking pregnancy[c]	6.2

a Based on sexually experienced participants.
b Refers to previous 2–3 months.
c Based on women's -reports of their partners' preferences.
d Agreement on avoiding and seeking pregnancy do not add to total -because of missing values and rounding.
Note: Unless otherwise noted, data are means (and standard deviations).

On average, participants reported past use of two contraceptive methods and current use of one. Young women reported high levels of commitment to avoiding pregnancy, sexual partner communication and sexual agency (means, 3.4–3.5 on scales of 1–4).

Participants reported no past contraceptive use during 17% of all quarterly visits and no current use during 27% of all quarterly visits. In 1% of visits, participants reported that they desired a pregnancy; in 10%, they reported that their partners did. However, they reported in 87% of all visits that they and their partners agreed on pregnancy intention; for the most part, they said that they agreed on avoiding pregnancy.

Women reported using different contraceptive methods throughout the study (Table 2). The most widely used contraceptives in the past 2–3 months were condoms (reported in 58% of visits), withdrawal (28%) and injectables (26%). The least used were the diaphragm, the vaginal ring and tubal ligation (0–1%). The most widely used current methods were condoms (52%), injectables (25%) and rhythm (13%); the least used methods were the diaphragm, the vaginal ring and IUDs (0–1%).

Table 2. Percentage of quarterly visits in which women reported recent or current use of specific contraceptive methods

Method	Recent[a]	Current
Condom	58.1	51.9
Spermicide	2.6	2.1
Pill	11.5	8.6
Injectable	26.1	24.6
Patch	8.9	7.4
IUD	1.1	1.0
Tubal ligation	0.8	na
Emergency contraception	2.3	na
Diaphragm	0.0	0.0
Vaginal ring	0.7	0.5
Withdrawal	27.5	na
Rhythm	16.3	12.7

a Refers to previous 2–3 months.
Note: na=not applicable because question was not asked.

Conjoint Results

At 6% of the 1,238 quarterly visits, participants gave the same rating to all nine scenarios. Because of the requirement of variability across scenarios, these visits were excluded, and the overall model was based on 1,167 lagged quarterly visits.

Group

The dimension that was most important in determining respondents' ratings of microbicide acceptability was efficacy relative to that of condoms (importance score, 40.0); next was contraceptive ability (35.4), then timing of use (17.4) and finally texture (7.2). Within the efficacy dimension, participants indicated a strong preference for microbicides to be as efficacious as condoms (part-worth utility score, 8.2—Table 3), a moderate preference for microbicides to be almost as efficacious as condoms (3.8) and a very strong negative preference for them to be less efficacious than condoms (−11.9). Within the contraceptive ability dimension, participants endorsed a strong preference for contraceptive microbicides (8.9) and an equally strong negative preference for noncontraceptive ones (−8.9). In fact, the preference for

contraceptive microbicides exceeded the preference for any other microbicide feature; similarly, the negative preference for noncontraceptive microbicides was stronger than any other negative preference except that for products that are less efficacious than condoms. With regard to timing of use, we found a moderate preference for microbicides that could be used 5–10 minutes after sex (4.3), a very slight preference for ones that could be used 5–10 minutes before sex (0.1) and a moderate negative preference for products that could be used one hour before sex (−4.4). As for texture, young women indicated a slight preference for nongreasy microbicides (1.8) over greasy ones (−1.8).

Table 3. Part-worth utility scores from group conjoint analysis of relative preference for selected microbicide dimensions

Dimension	Score
STD prevention efficacy compared with that of condoms	
As good	8.2
Almost as good	3.8
Not as good	−11.9
Contraceptive ability	
Yes	8.9
No	−8.9
Timing of use	
5–10 minutes after sex	4.3
5–10 minutes before sex	0.1
1 hour before sex	−4.4
Texture	
Not greasy	1.8
Greasy	−1nnn8

Individual

The scenarios involving contraceptive microbicides were rated more positively (mean part-worth -utility score, 58.2; standard deviation, 22.1) than those involving noncontraceptive microbicides (mean, 40.4; standard deviation, 21.8). At the item level, the most acceptable microbicide was one that had contraceptive ability, would be used 5–10 minutes after sex, would not feel greasy and would work as well as condoms; this hypothetical product received a mean score of 72.9 (standard deviation, 29.1). The least acceptable microbicide was one that would not prevent pregnancy, would be used 5–10 minutes after sex, would feel greasy and would not work as well as condoms; this hypothetical product received a mean score of 33.2 (standard deviation, 25.0).

Pearson Correlations

The preference for a contraceptive microbicide was correlated with all measured characteristics reflecting women's contraceptive use and sexual relationships except past contraceptive use and partner's pregnancy desires (Table 4). It was positively correlated with participants' reports of current contraceptive use, partner agreement about pregnancy intention, couples' agreement to avoid pregnancy, commitment to avoiding pregnancy, partner communication about sex and sexual agency (coefficients, 0.07–0.18). It was negatively correlated with reports of no current contraceptive use, no past contraceptive use, desiring pregnancy and couples' agreement to seek pregnancy (−0.08 to −0.14).

Table 4. Coefficients from analyses assessing the correlation between selected characteristics of women and their preference for a contraceptive microbicide

Characteristic	Coefficient
Current contraceptive use	0.10[b]
Past contraceptive use[d]	0.04
No current contraceptive use	−0.14[c]
No past contraceptive use[d]	−0.13[c]
Desires pregnancy	−0.08[a]
Partner desires pregnancy[e]	−0.04
Couple agree on pregnancy intention[e]	0.07[a]
Couple agree on avoiding pregnancy[e]	0.13[c]
Couple agree on seeking pregnancy[e]	−0.13[c]
Commitment to avoiding pregnancy	0.18[c]

Sexual partner communication	0.10[b]
Sexual agency	0.14[c]

a p<.05.
b p<.01.
c p<.001.
d Refers to previous 2–3 months.
E Based on women's reports of their partners' preferences.

Discussion

Researchers have demonstrated a worldwide need for dual protection options to protect women against infection and unwanted conception.[6] Examination of the molecular structure of compounds with contraceptive and anti-HIV properties reveals the feasibility of incorporating dual compounds into one microbicide product.[5] Furthermore, knowing that one product can help prevent STDs and pregnancy might encourage women to use it properly (in clinical trials and in actual use), and if such a product were provided at a similar cost to other prevention methods, it may be especially valuable for young women with limited financial resources.

Our results extend existing literature on microbicide preferences by documenting that over time, young women maintain a preference for microbicides with contraceptive abilities. Efficacy relative to that of condoms was the most important overall dimension associated with microbicide acceptability, followed closely by contraceptive ability. However, when the various levels of each microbicide dimension were evaluated, young women rated -contraceptive ability to be the most significant attribute of microbicides and a lower efficacy than that of condoms to be the least preferred characteristic. Moreover, the most preferred microbicide scenarios described hypothetical products that were contraceptive and efficacious, highlighting the importance of and need for more dual protection methods.

The most preferred microbicide scenarios described hypothetical products that were contraceptive and efficacious [for STD prevention].

Our findings support previous research showing that young women value some microbicide dimensions and levels more than others.[13, 15, 31, 32] For example, texture and timing of use were reported to be the least significant microbicide dimensions. Still, participants clearly demonstrated preferences for nongreasy microbicides used 5–10 minutes after sex. Despite this finding, poorest adherence to microbicide regimens has been found for products intended to be used after sex,[12] suggesting that preferences and actual behavior regarding timing of use vary significantly.[12, 33] As microbicide clinical and safety trials continue, concurrent product acceptability research that incorporates multiple product dimension levels should be pursued, especially work aimed at clarifying these distinctions among adolescents and young adults.[13, 15, 34]

These data also suggest that contraceptive microbicides were important to women who were committed to pregnancy prevention and to those who were currently using contraceptives. The hypothetical contraceptive microbicides may have been attractive to these young women because they represented an alternative pregnancy prevention option.

Young women who reported no current or past contraceptive use were relatively unlikely to prefer contraceptive microbicides. For some, this may reflect an ongoing unwillingness or inability to use preventive measures. For others, however, it may reflect a desire for pregnancy, as women in our sample were transitioning into their mid-20s, the age range in which the likelihood of intended pregnancy is highest.[35] Additional research should consider whether contraceptive microbicide acceptability varies across women's reproductive years on the basis of their childbearing desires.

Some of our results are consistent with previous findings on the association between relationship dynamics and contraceptive decisions,[17, 20, 36-39] including a preference for dual methods of contraception.[40] We discovered that both partner communication and sexual agency were associated with a preference for contraceptive microbicides. Young women who communicated well with their partners may have been more comfortable than others in expressing their desire to delay pregnancy. Similarly, those reporting high levels of sexual agency may have felt more - empowered within their relationship to take steps to prevent STDs and unwanted pregnancy. However, our findings run counter to work showing that women in relationships with less sexual power are more interested in preventing pregnancy.[22, 39, 41] Our results thus add to the literature by emphasizing that positive relationship dynamics and increased relationship power are also associated with a desire for contraceptive microbicides. This implies that although microbicides are commonly touted as a woman-initiated prevention method, the desire for and potential utilization of these methods may be linked to a variety of (often positive) facets of one's sexual relationship.

Preferences for contraceptive microbicides were aligned with perceived partner agreement about pregnancy intention. They were positively correlated with couples' agreement on avoiding a pregnancy and negatively correlated with couples' wish to seek pregnancy. Thus, interest in having children and, especially, perceived partner agreement concerning childbearing are important issues as young women consider their preference for contraceptive microbicides and may have implications for health care providers' contraceptive discussions with young women.

Limitations and Future Research

Several limitations to this study should be noted. First, the data were derived from a larger study of sexuality and sexual behaviors among young women. As a result, the variables of interest were constrained to those available in the larger study. Second, the generalizability of this study is limited by the demographic profile of the participants (e.g., primarily black), recruitment from community primary care clinics in Indianapolis and potential selection bias (i.e., participants

were all women who agreed to engage in the demanding larger longitudinal study). Third, the partner agreement measure assessed young women's own pregnancy desire and their assessment of their partners' pregnancy desire; participants may have overestimated or underestimated their partners' intentions. However, young women's perceptions of their partners' attitudes likely influence their sexual, contraceptive and disease prevention behaviors.[16-20]

Future research would benefit from a more comprehensive assessment of associations between relationship characteristics and microbicide preferences (and contraceptive and STD prevention behaviors). Inclusion of additional relationship variables (e.g., relationship length, fidelity) would elucidate more explicit and nuanced ways by which relationships may influence contraceptive microbicide preferences. Mixed-methods research and studies involving sexual partners may also be helpful in providing insight into individual and relationship facets that contribute to microbicide acceptability. Although not directly evaluated in the present study, desire for contraceptive microbicides may shift across time as women's pregnancy and childbearing desires change.[15] Additional research is needed to determine how pregnancy intentions and ambivalence may influence contraceptive microbicide acceptability and utilization throughout the reproductive years. Studies that include more diverse samples are also needed to determine if preferences for contraceptive microbicides vary across groups. Furthermore, future research should assess microbicide acceptability within the context of recent prevention innovations and clinical trial outcomes.

Conclusions

Microbicides are unique in their potential to have both contraceptive and disease prevention properties, and young women indicate an interest in this type of product. Future research is needed to evaluate product specifications, relationship dynamics and pregnancy intentions associated with preference for an actual microbicide product. Upon development of contraceptive microbicides, it is essential that adolescent and young women be involved in clinical trials to examine the factors associated with acceptability and effectiveness. Widespread adoption of contraceptive microbicides could play an important role in reducing the enormous cost associated with unwanted pregnancy and STDs.

Acknowledgments

[1] Women were instructed to insert one dose of the gel 12 hours before having sex and another dose 12 hours after having sex, but not to exceed two doses within 24 hours.

[2] Participants reporting more than 20 partners were categorized as -having had 21–25, 26–30 or more than 30 partners.

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