Published in final edited form as:

J Adolesc Health. 2007 October ; 41(4): 357–362.

Predictors of Using a Microbicide-like Product Among Adolescent Girls

Mary B. Short, PhD¹, Paul A. Succop, PhD², Ana M. Ugueto, PhD³, and Susan L. Rosenthal, PhD³

¹Department of Psychology, University of Houston-Clear Lake, Houston, TX

²Department of Environmental Health, University of Cincinnati College of Medicine, Cincinnati, Ohio

³Department of Pediatrics and Sealy Center for Vaccine Development, University of Texas Medical Branch, Galveston, TX

Abstract

Purpose—This study examined demographic, sexual history and weekly contextual variables, and perceptions about microbicides as predictors of microbicide-like product use.

Methods—Adolescent girls (N=208; 14-21 years) participated in a 6-month study in which they completed three face-to-face interviews and 24-weekly phone call interviews. Participants were given microbicide-like products (vaginal lubricants) and encouraged to use them with condoms when they had intercourse.

Results—Seventy-five percent of girls had a sexual opportunity to use the product. Using multi-variable logistic regression, the following variables independently predicted ever using the product: length of sexual experience, number of lifetime vaginal partners, and the Comparison to Condoms subscale on the Perceptions of Microbicides Scale. Using mixed model repeat measure linear regression, the following variables independently predicted frequency of use: week of the study, age, condom frequency prior to the study, and 3 subscales on the Perceptions of Microbicide Scale including the Comparison to Condoms subscale, the Negative Effects subscale, and the Pleasure subscale.

Conclusion—Most girls used the product, including those who were not protecting themselves with condoms. Girls' initial perceptions regarding the product predicted initial use and frequency of use. Further research should evaluate the best methods for supporting the use of these products by young or sexually less experienced girls.

Keywords

topical microbicides; adolescence; sexuality; condoms; sexually transmitted infections

Introduction

In the United States, sexually active adolescents are at high risk of acquiring sexually transmitted infections (STIs).¹ Although correct and consistent use of condoms effectively protects against HIV, gonorrhea, and Chlamydia²⁻⁴ and effectively reduces the risk of the

Corresponding Author: Mary B Short, Ph.D., Department of Psychology, University of Houston - Clear Lake, 2700 Bay Area Blvd, Houston, TX 77058. Phone (281) 283-3324. FAX (281) 283-3408. E-mail: shortmb@uhcl.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.

transmission of herpes⁵ and human papillomavirus,⁶ the STI rates remain unacceptably high in adolescents, in part because condoms are used inconsistently. There are a number of reasons why adolescents do not routinely use condoms, including the male perception of condoms as interfering with sexual activity and pleasure.⁷⁻¹¹ In addition, females have very little control over the use of condoms, since they can only request the use of condoms. Adolescent girls also may be reluctant to request condom use either because of real or perceived resistance by their male partners.¹²

A new method for STI prevention currently in development is topical microbicides, which are designed to be female initiated. In addition, unlike condoms, microbicides will increase vaginal lubrication, and thus, they actually may be perceived as enhancing pleasure during intercourse.¹³⁻¹⁶ Topical microbicides would be formulated as creams, gels, or films, which would be placed in the vagina or rectum to prevent acquisition or transmission of STIs and possibly pregnancy.¹⁷ There are a variety of ways in which microbicides could be protective including altering the vaginal environment to reduce susceptibility, inhibiting replication of the pathogen, or reducing the likelihood of attachment of the pathogen.^{18,19} However, like condoms, microbicides only will affect STI transmission if they are acceptable and used correctly and consistently by susceptible individuals (e. g. adolescent girls).²⁰ Understanding issues associated with acceptability and use prior to the products being available may enhance educational efforts designed to foster uptake by vulnerable individuals.

Given that microbicides are not available yet, acceptability research has focused either on attitudes towards hypothetical products or on the experience using experimental microbicides during clinical trials.^{13-15, 21-37} These studies have found that females from a variety of countries and populations are likely to find these products acceptable.^{14, 15, 21, 22, 24, 35-37} In general, women agree about ideal product characteristics such as easy to use and not messy, although they may attribute these characteristics to different formulations.^{13, 15, 22, 24, 27, 28} Women who are participating in clinical trials have reported a willingness to manage the “nuisance” factors such as leakage.¹³ Within the U.S., the additional lubrication provided by microbicides often is considered an advantage and has been hypothesized to be particularly relevant to young teenagers.^{13-16, 27} Another difference that may exist between adolescents and adults is that adults might like a product they could use up to 8 hours before sexual intercourse;²⁸ however, adolescents have expressed concern that if they did not end up having intercourse, they would consider it “wasted”.³³ Thus, this timing of usage might not work well in the context of adolescents’ lives. To date, young adolescents’ have not been included in actual clinical trials; therefore, research focusing on adolescents is based on hypothetical questions and products. This study extends the previous research by examining adolescent girls’ use and frequency of use of products that are similar in formulation to actual microbicides.^{13-15, 21-37} In the current study, the girls were asked to initially try and to continue using the products in the context of their regular sexual lives. Thus, the following two specific aims were evaluated:

1. to determine if demographic variables, sexual history variables, and perceptions about microbicides were related to ever using a microbicide-like product by adolescent girls;
2. to determine, if among girls who used the product, whether demographic variables, sexual history variables, perceptions of microbicides, and the weekly context would be related to the frequency of use of a microbicide-like product during the week.

Materials and Methods

Sample and Procedure

Two hundred and eight sexually experienced adolescent girls, between the ages of 14 and 21, were recruited from school-based teen clinics and local colleges, and through snowball

sampling (i.e., participants referred other girls to the study) to participate in a 6-month study examining the acceptability and use of a microbicide-like product. Girls completed three face-to-face interviews (at intake, at three months, and at six months) and weekly phone call interviews (“weeklies”). At intake, participants were offered two different products, *Replens® Vaginal Moisturizer* (Warner Wellcome, Morris Plains, NJ), a gel-filled applicator, and *Lubrin® Insert* (Bradley Pharmaceuticals, Fairfield, NJ), a suppository, and were told that scientists were developing similar products to protect against STIs. Girls could choose one or both of these products and were encouraged to use them whenever they had sexual intercourse. They were reminded that the products did not provide protection against STIs or pregnancy, and were given condoms and counseled to use them whenever they had intercourse. Participants received \$30 for each completed interview and an additional \$3 for each completed “weekly”. At the intake interview and at the 6-month interview, all girls were screened for pregnancy and STIs; at the 3-month interview, girls were offered a pregnancy test.

The Institutional Review Board at the University of Texas Medical Branch in Galveston approved this study. Parental consent and adolescent assent were obtained for girls younger than 18 years, and self-consent was obtained for all girls 18 years or older.

Measures

Independent variables for the prediction of ever use included demographic variables, sexual history variables, and the Perceptions of Microbicide Scale. Demographic variables included chronological age and race/ethnicity. Race/ethnicity was collapsed for analysis into three categories: Non-Hispanic Caucasian/Other, African-American, and Hispanic. Sexual history information included information about sexual behavior across the participant’s lifetime, including length of time sexually experienced, number of lifetime sexual partners, history of pregnancy, history of an STI, and frequency of condom use. Frequency of condom use was measured by asking the girls how typically they used a condom (“always,” “sometimes,” and “never”). The Perceptions of Microbicides Scale³⁸ is an 18-item self-report questionnaire that measures girls’ impressions regarding the likelihood of using a microbicide-like product. The development of this scale has been previously described.³⁹ Responses are rated on a 5-point Likert scale in which “1” indicates “very unlikely” and “5” indicates “very likely.” The scale has six subscales: Comparison to Condoms, Negative Impact on Interpersonal Relationships, Health Benefits, Negative Effects, Positive Impact on Pleasure, and Comfort. See Table 1 for the questions from the Perceptions of Microbicides Scale.

For the prediction of frequency of use during the week, all of the independent variables described above were included. Additional variables used to assess the context of the week included what week the girl first tried the product, how many partners she had that week, number of times she received oral sex that week, and what kind of week she was having. Quality of week was measured subjectively on a 5-point Likert scale with 1 being “horrible” and 5 being “terrific.”

Ever use was defined as using the product in the context of sexual behavior. Girls who only used the product on their own (not in the context of sex) were not considered users. Girls’ use of the product was taken from self-reported information on the “weeklies,” at the 3-month interview, or at the 6-month interview. If the girl reported use at any time during the study, she was considered a user. Frequency of use was the percentage of times a girl used the microbicide divided by the number of times she reported sexual intercourse that week.

Statistical Analysis

Data were double entered into a MS Excel spreadsheet and then imported into SAS³⁹ for analyses. Descriptive statistics for each independent variable were calculated. The first specific

aim regarding ever using the product was analyzed using a multi-variable logistic regression model. The second specific aim regarding frequency of using the product was analyzed in a mixed repeated measure linear regression model. A backward elimination strategy was employed to remove insignificant predictors of both outcomes. In the final models, only statistically significant predictors ($p < .05$) were retained.

Results

Participants

Of the 208 girls initially enrolled in the study, only 206 were seen after the intake interview. An additional girl was eliminated from analysis because she was only seen once after intake and did not report any sexual activity. Of the remaining 205 girls, 185 (90%) girls reported having sexual intercourse either on the “weeklies” or at the 3-month or 6-month interviews. Of these 185 girls, 77% of the girls completed at least 50% of the possible “weeklies.” For the purposes of this analysis, the sample size was 185 (those that had an opportunity to use the product in a sexual context), and the remaining descriptive statistics will be presented on these 185 participants. Means and standard deviations or ranges for the demographic and sexual history variables are presented in Table 2. Means for each subscale of the Perceptions of Microbicides Scale are presented in Table 3.

Of the 185 girls who had an opportunity to use the product, 138 (75%) girls reported ever using the product in the context of sex on the “weeklies”, or at the 3-month or 6-month interviews. When evaluating the frequency of use, only “weekly” data was used, since it is the only way repeated use could be measured. Of those 138 girls who used overall, 122 girls reported product use on a weekly. Thus, for the purposes of analyzing the second specific aim (frequency of use), the sample size was 122 girls. These 122 girls used the product an average of 39.5%, with ranges in any week from 0 to 100%.

Ever Use—Demographic variables, sexual history variables, and Perceptions of Microbicides subscales were entered into a multi-variable logistic regression model. After backward elimination, length of sexual experience, number of lifetime vaginal partners, and the Comparison to Condoms subscale remained in the final model. See Table 4. Girls who used the product had a greater length of sexual experience, fewer lifetime partners at intake, and a more favorable impression of the product as compared to condoms. The following independent variables did not predict ever using the product: age, race/ethnicity, history of pregnancy, history of an STI, frequency of condom use, and the five remaining Perceptions of Microbicides subscales. Since length of time sexually experienced was significantly correlated with age ($r = 0.70$, $p < 0.001$), a second analysis was conducted using all of the independent variables listed above, except length of time sexually experienced. In that final model, the results were similar with age, number of lifetime partners, and the Comparison to Condoms subscale all remaining in the final model.

Weekly Frequency of Use—All potential predictors were entered into a mixed repeated measure linear regression model to determine a final model. After backward elimination, week of the study, age, condom frequency prior to the study, the Comparison to Condoms subscale, the Negative Effects subscale, and the Pleasure subscale were found to be significant. See Table 5. Girls were more likely to use the product a greater percentage of the time earlier in the study. Characteristics of the girls and their perceptions of the product prior to the start of the study were related to the percentage of use during the week. Girls who were older, used condoms more frequently, and perceived that the product would have fewer negative effects, that it would be more positive as compared to condoms, and that it would be associated with greater pleasure used the product more frequently each week. None of the variables assessing the context of

the week in question (what kind of week she was having, how many partners she had that week, and number of times she received oral sex that week) were significantly related to the frequency of use.

Discussion

Once safe and effective microbicides are on the market, they have the potential to limit the transmission of STIs and reduce this epidemic. However, if microbicides are going to have an impact, they must be found acceptable to vulnerable or at-risk populations. Individuals obviously have to use the product initially, but continued and consistent use is equally important. For example, the risk of transmission of herpes was reduced in those individuals who used condoms consistently as opposed to sporadically.⁵ Thus, understanding the predictors of both initial use and frequency of use will be important in developing interventions.

In this study, most of the girls were willing to try the product at least once, and the average rate of use was almost 40%. It is possible that initial use was driven by the demands of being in the study; however, those who used the product more frequently may have found some benefit from use.¹⁶ When examining the predictors of use, it was both characteristics of the girls and perceptions of the product that led to initial use and frequency of use of the product. Age and sexual experiences (length of time and number of lifetime partners) were associated with ever use and greater frequency of use respectively. Girls who had been sexually experienced for a shorter time (or who are younger) were less likely to use the product. The design of this study did not allow for us to examine which specific developmental characteristics associated with age and experience were relevant, but those questions could be addressed in future research. Nevertheless, it is clear that efforts to enhance both initial use and frequency of use of microbicides will need to use developmentally appropriate messages to target younger or less sexually experienced adolescent girls. This is particularly important since these younger girls may be more vulnerable to STI acquisition.^{1,2}

The current study found that initial perceptions about the product both predicted initial use and frequency of use. Not surprisingly, this research suggested that adolescents may make their decisions about using these products in relationship to their perceptions of condoms. If these products are perceived as offering advantages over condoms, they may be used more frequently. Frequency of condom use prior to the start of the study was positively related to frequency of use of the product. It is not clear why this was, but it may have been related to the girls' ability to develop a habit of using a method as part of their sexual activity. This would suggest that some of the same barriers, which adolescents face in using condoms consistently, may be true for using microbicides consistently.⁴⁰ For example, for both condoms and microbicides, adolescents must be foresighted enough to have the product available, and they need to use it at a proximal time to coitus. Microbicides may have the advantage because the timing relative to coitus may be more flexible than it is for condoms. One potential concern is that first generation microbicides are unlikely to be as effective as condoms,⁴¹ and thus, the target users would be those not using condoms or those unwilling to use both condoms and microbicides. It will be important to develop the right strategy for reaching non-condom users without encouraging condom users to replace condoms with microbicides.

Other initial impressions were related to frequency of use. Similar to other studies, the current study found that product use was associated with perceptions that the product would be associated with sexual pleasure and that there would be fewer negative aspects of product use.^{13-15, 21-30} It is unclear how these initial impressions related to frequency of use; it is possible that participants found their initial impressions were confirmed.

The girls' frequency of using the product was greater at the beginning of the study. This may be because the girls felt that they had fulfilled their obligation to the research staff, did not like using the product, or did not develop the habit of product use. Others have found that condom use behaviors in new relationships are indistinguishable from those in established relationships.⁴² The same mechanism for decrease in frequency is unlikely to be a factor in this study, since use of this non-active product should not have been associated with perception of risk. However, it serves as a reminder that strategies must be developed that support adolescents' use over time.

The results of this study should be interpreted in the context of using a product that provided no protection against risk. Further, since the girls in the current study were willing to participate in a study about sexual behavior, these girls were probably more comfortable with sex than the average adolescent girl. In addition, all girls under 18 were required to have parental consent to participate in the study. Their parents were never told directly that their daughters were sexually experienced, but the daughters were counseled that it might occur to their parents. Thus, it should be expected that the findings will not entirely translate to girls in the real world or real life experience once topical microbicides are available. On the other hand, the results of this study support the concept that girls will be willing to place a product in their vaginas in the context of sexual activity, a concern that had been raised previously. In addition, it provides direction for future research. It will be important to investigate the barriers to use among younger, less sexually experienced girls and to understand how initial impressions of a microbicide-like product influence use. Greater knowledge about both of these issues can lead to the development of testable interventions to enhance use. Finally, the issue of how to aid adolescents in developing condom or microbicide use as a habit, which can be sustained long term, should be investigated.

Acknowledgements

The authors wish to thank The Teen Health Center, Inc and Galveston College for helping with recruitment, Beth Auslander, Elissa Brown, Stephanie Ramos, Jennifer K. Oakes, E. and Alexandra Zubowicz for their support in data collection and data management, and all of the girls for their participation in this research study.

Sources of support: Support was received from the National Institute of Child Health and Human Development (R01 HD4015101) and the National Institutes of Allergy and Infectious Diseases (U19 A161972, and N01 A150042) of the National Institutes of Health. Studies were conducted on the General Clinical Research Center (GCRC) at the University of Texas Medical Branch at Galveston. The GCRC is funded by a grant (M01 RR 00073) from the National Center for Research Resources, NIH, USPHS.

References

1. Center for Disease Control and Prevention STD Surveillance 2004: Special Focus Profiles - Adolescents and Young Adults Available at: <http://www.cdc.gov/std/stats/adol.htm> Accessed November 8, 2005
2. Weinstock H, Berman S, Cates W Jr. Sexually transmitted diseases among American youth: Incidence and prevalence estimates, 2000. *Perspect Sex Reprod Health* 2004;36:6–10. [PubMed: 14982671]
3. Holmes KK, Levine R, Weaver M. Effectiveness of condoms in preventing sexually transmitted infections. *Bull World Health Organ* 2004;82:454–464. [PubMed: 15356939]
4. Shlay JC, McClung MW, Patnaik JL, et al. Comparison of sexually transmitted disease prevalence by reported level of condom use among patients attending an urban sexually transmitted disease clinic. *Sex Transm Dis* 2004;31:154–160. [PubMed: 15076927]
5. Wald A, Langenberg AG, Krantz E, et al. The relationship between condom use and herpes simplex virus acquisition. *Ann Intern Med* 2005;143:707–13. [PubMed: 16287791]
6. Winer RL, Hughes JP, Feng Q, et al. Condom use and the risk of genital human papillomavirus infection in young women. *N Engl J Med* 2006;354:2645–54. [PubMed: 16790697]
7. Conley TD, Collins BE. Differences between condom users and condom nonusers in their multidimensional attitudes. *J Applied Soc Psych* 2005;35:603–620.

8. Crosby R, Salazar LF, DiClemente RJ. Lack of recent condom use among detained adolescent males: A multilevel investigation. *Sex Transm Infect* 2004;80:425–429. [PubMed: 15572607]
9. Crosby R, Salazar LF, DiClemente RJ, et al. Correlates of having unprotected vaginal sex among detained adolescent females: An exploratory study of sexual factors. *Sex Health* 2004;1:151–155. [PubMed: 16335479]
10. Flood M. Lads in latex? Why young heterosexual men don't use condoms. *Impact* 2003;4:10–11.
11. Widdice LE, Cornell JL, Liang W, et al. Having sex and condom use: Potential risks and benefits reported by young, sexually inexperienced adolescents. *J Adolesc Health* 2006;39:588–595. [PubMed: 16982395]
12. Rosenthal SL, Cohen SS. Primary prevention of sexually transmitted disease: Self-efficacy in the context of sexual coercion. *Adolesc Pediatr Gynecol* 1994;7:63–68.
13. Bentley ME, Morrow KM, Fullem A, et al. Acceptability of a novel vaginal microbicide during a safety trial among low-risk women. *Fam Plann Perspect* 2000;32:184–188. [PubMed: 10942354]
14. Mason TH, Foster SE, Finlinson HA, et al. Perspectives related to the potential use of vaginal microbicides among drug-involved women: Focus groups in three cities in the United States and Puerto Rico. *AIDS Behav* 2003;4:339–351. [PubMed: 14707531]
15. Morrow K, Rosen R, Richter L, et al. The acceptability of an investigational vaginal microbicide, PRO 2000 gel, among women in a phase I clinical trial. *J Wom Health* 2003;12:655–666.
16. Zubowicz EA, Oakes JK, Perfect MM, et al. Adolescents' descriptions of the physical characteristics of microbicide surrogates and experiences of use. *J Wom Health* 2006;12:952–961.
17. National Institute of Allergy and Infectious Diseases Topical microbicides: Preventing sexually transmitted diseases Available at: http://www.niaid.nih.gov/publications/topical_microbicides.pdf Accessed November 8, 2005
18. Coggins C. Avoiding HIV transmission: women need more options. *Sex Transm Infect* 1999;75:374–375. [PubMed: 10754937]
19. Rupp R, Stanberry LR, Rosenthal SL. New biomedical approaches for sexually transmitted infection prevention: vaccines and microbicides. *Adolesc Med Clin* 2004;15(2):393–407. [PubMed: 15449851]
20. Severy LJ, Newcomer S. Critical issues in contraceptive and STI acceptability research. *J Social Issues* 2005;61:45–65.
21. Bentley ME, Fullem AM, Tolley EE, et al. Acceptability of a microbicides among women and their partners in a 4-country phase I trial. *Amer J Public Health* 2004;94:1159–1164. [PubMed: 15226137]
22. Cohen JA, Stelle MS, Urena FIC, et al. Microbicide applicators: Understanding design preferences among women in the Dominican Republic and South Africa. *Sex Transm Dis* 2007;34:15–19. [PubMed: 16691157]
23. El-Sadr WM, Mayer KH, Maslankowski L, et al. Safety and acceptability of cellulose sulfate as a vaginal microbicide in HIV-infected women. *AIDS* 2006;20:1109–1116. [PubMed: 16691061]
24. Hardy E, Jiminez AL, de Padua KS, et al. Women's preference for vaginal antimicrobial contraceptives III: Choice of a formulation, applicator, and packaging. *Contraception* 1998;58:245–249. [PubMed: 9866007]
25. Hardy E, Padua KS, Osis MJD, et al. Women's preferences for vaginal antimicrobial contraceptives IV: Attributes of a formulation that would protect from STD/AIDS. *Contraception* 1998;58:251–255. [PubMed: 9866008]
26. Hammett TM, Mason TH, Joanis CL, et al. Acceptability of formulations and application methods for vaginal microbicides among drug-involved women: results of product trials in three cities. *Sex Transm Dis* 2000;27:119–126. [PubMed: 10676980]
27. Hammett TM, Norton GD, Mason TH, et al. Drug-involved women as potential users of vaginal microbicides for HIV and STD prevention: a three-city survey. *J Womens Health Gend Based Med* 2000;9:1071–1080. [PubMed: 11153103]
28. Holt BY, Morwitz VG, Ngo L, et al. Microbicide preference among young women in California. *J Womens Health* 2006;15:281–294.
29. Mosack KE, Weeks MR, Novick SL, et al. High-risk women's willingness to try a simulated vaginal microbicide: Results from a pilot study. *Women Health* 2005;42:71–88. [PubMed: 16537301]

30. Morrow K, Rosen R, Richter L, et al. The acceptability of an investigational vaginal microbicide, PRO 2000 gel, among women in a phase I clinical trial. *J Womens Health* 2003;12:655–666.
31. Schwartz JL, Ballagh SA, Kwok C, et al. Fourteen-day safety and acceptability study of the universal placebo gel. *Contraception* 2006;75:136–141. [PubMed: 17241844]
32. Schwartz JL, Mauck C, Lai JJ. Fourteen-day safety and acceptability study of 6% cellulose sulfate gel: A randomized double-blind Phase I safety study. *Contraception* 2006;74:133–140. [PubMed: 16860051]
33. Short MB, Mills L, Majkowski JM, Stanberry LR, et al. Topical microbicides use by adolescent girls: Concerns about timing, efficacy, and safety. *Sex Transm Dis* 2003;30:854–858. [PubMed: 14603095]
34. Short MB, Mills L, Majkowski JM, et al. Adolescent issues associated with knowledge of and access to topical microbicides. *J Wom Health* 2004;13:1127–1136.
35. Trolley EE, Eng E, Kohli R, et al. Examining the context of microbicide acceptability among married women and men in India. *Cult Health Sex* 2006;8:351–369.
36. Weeks MR, Mosack KE, Abbott M, et al. Microbicide acceptability among high-risk urban U.S. women: Experiences and perceptions of sexually transmitted HIV prevention. *Sex Transm Dis* 2004;31:682–690. [PubMed: 15502677]
37. Veldhuijzen N, Nyinawabega J, Umulisa M, et al. Preparing for microbicide trials in Rwanda: Focus group discussions with Rwandan women and men. *Cult Health Sex* 2006;8:395–406. [PubMed: 16923644]
38. Short MB, Rosenthal SL, Perfect MM, et al. Measurement of microbicide acceptability among US adolescent girls. *Sex Transm Dis* 2006;33:1–5.
39. SAS [computer program]. Version 9.1. SAS Institute; Cary, NC: 20022003.
40. Center for Disease Control YRBSS: National Youth Risk Behavior Survey: 1991–2005 20062006 Available at: www.cdc.gov/HealthyYouth/yrbs/pdf/trends/2005_YRBS_Sexual_Behaviors.pdf Accessed April 5, 2007
41. Tolley EE, Severy LJ. Integrating behavioral and social science research into microbicide clinical trials: Challenges and opportunities. *Amer J Public Health* 2006;96:79–83. [PubMed: 16317214]
42. Fortenberry JD, Tu W, Harezlak J, et al. Condom use as a function of time in a new and established adolescent sexual relationships. *Amer J Public Health* 2002;92:211–213. [PubMed: 11818293]

Table 1**Questions from the Perceptions of Microbicide Scale**

The likelihood that you would find this gel/suppository easy to put in would be ...
The likelihood that this gel/suppository would increase the wetness of your vagina during sex would be ...
The likelihood of a gel/suppository like this one preventing STDs would be ...
The likelihood that your using the gel/suppository will be easier for your partner than male condoms would be ...
The likelihood that you could afford this gel/suppository would be ...
The likelihood of the gel/suppository covering and protecting your whole vagina would be ...
The likelihood that using this gel/suppository would make your partner's penis irritated would be ...
The likelihood that using this gel/suppository would make you feel in control of your own health would be ...
The likelihood that using this gel/suppository would irritate your vagina would be ...
The likelihood that your partner will worry that you think he is cheating if you use this gel/suppository would be ...
The likelihood that the gel/suppository will be easier to use than male condoms for you would be ...
The likelihood that this gel/suppository would make you seem "easy" would be ...
The likelihood that using this gel/suppository would be messy would be ...
The likelihood that the gel/suppository will feel better to you than male condoms would be ...
The likelihood that using the gel/suppository would interrupt intercourse would be ...
The likelihood that your partner will think you are cheating if you use this gel/suppository would be ...
The likelihood of this getting stuck in one place in your vagina would be ...
The likelihood that using the gel/suppository will feel better to your partner than male condoms would be ...
The likelihood that the gel/suppository will improve the health of your vagina would be ...
The likelihood that using the gel/suppository would make your partner mad at you would be ...
The effect on your pleasure during intercourse when using the gel/suppository would be ...
The effect on your partner's pleasure during intercourse when using the gel/suppository would be ...

STD = sexually transmitted disease.

Table 2

Demographic/Sexual History Variables for Sexually Active Girls (n = 185)

Variable	% or Mean
Mean Age	18.3 (range 14-23) Median = 18.4
Race/Ethnicity	
African American	38%
Hispanic	33%
Non-Hispanic Caucasian/Other	29%
Length of time sexually active	3.29 years (range = 0.23-9.13)
Lifetime Number of partners	5.24 partners (range = 1 - 40)
History of pregnancy	41.1%
History of STI	30.4%
Condom Frequency	21.5% Never 37.1% Sometimes 41.5% Always

Table 3

Mean Scores on the Subscales on the Perceptions of Microbicide Scale

Subscale	Mean (SD)	Rating
Comparison to Condoms	4.11 (0.88)	"likely"
Negative Impact on Interpersonal Relationships	1.82 (0.78)	"very unlikely"
Health Benefits	3.67 (0.81)	"neither likely nor unlikely"
Negative Effects	2.60 (0.95)	"unlikely"
Positive Impact on Pleasure	4.09 (0.76)	"likely"
Comfort	4.40 (0.79)	"likely"

Table 4

Logistic regression analysis of the relationship between ever using the product use and the independent variables

Variable	Wald Chi Square	Significance
Ever Using		
Age of Sexual Initiation	7.08	<0.01
Number of Lifetime Partners	7.43	<0.01
Comparison to Condoms Subscale	5.28	<0.02

Table 5

Linear regression analysis of the relationship between frequency of using the product and the independent variables

Variable	β	F	Significance
Frequency of Use			
Week of the Study	-0.01	16.32	<0.01
Age	0.05	15.14	<0.01
Condom Frequency	0.09	9.58	<0.01
Comparison to Condoms Subscale	-0.07	5.77	<0.02
Negative Effects Subscale	-0.07	8.92	<0.01
Pleasure Subscale	0.09	9.23	<0.01