Published in final edited form as:

J Pediatr Adolesc Gynecol. 2009 October ; 22(5): 313–317. doi:10.1016/j.jpag.2009.02.003.

Relationship Context Associated with Microbicide-like Product Use

Mary B. Short, PhD^{1,2}, Susan L. Rosenthal, PhD¹, Beth A. Auslander, PhD¹, and Paul A. Succop, PhD³

¹Department of Pediatrics, University of Texas Medical Branch, Galveston, Texas

²Department of Psychology, University of Houston-Clear Lake, Houston, Texas

³Department of Environmental Health, University of Cincinnati College of Medicine, Cincinnati, Ohio

Abstract

Study Objective—Topical microbicides are being developed to provide an alternative method of prevention of HIV and sexually transmitted infections. Although topical microbicides would be a female-controlled method of prevention, their use is likely to be disclosed to partners. Thus, the characteristics of the partner relationship may play a role in their use. We sought to examine whether qualities of the relationship and of the partner were associated with using a microbicide-like product.

Design—We studied 166 females (14 to 21 years of age) who were participating in a 6-month study of microbicide-like products (vaginal lubricants). They described partner relationships and characteristics of the partners.

Results—Of the 166 participants, 118 used the product. In bivariate analyses, those whose relationships were longer, monogamous, more mutual, and more satisfying were more likely to use the product. Further, when sex occurred in the young women's or couples' homes, use also was more likely. There was no relationship between product use and whether the partner had a job or was in school or between the partners' levels of substance use. In a multivariable logistic regression with backwards elimination, only relationship satisfaction remained significant in the model.

Conclusion—Topical microbicides will be used within the context of a relationship, and characteristics of the relationship most likely will influence use. These findings suggest that special attention may have to be given to supporting use in high-risk relationships and that all interventions to enhance uptake should consider the relationship context.

Keywords

Partner Relationship; Sexually Transmitted Infections; Topical Microbicides; Adolescents

Introduction

The acquisition of sexually transmitted infections (STIs) is a significant health problem for adolescents.¹ It is estimated that by the age of 25, 50% of all sexually experienced individuals will have acquired an STI.² There are many reasons for the high rates of STIs

among adolescents, including the prevalence of STIs in their partner pools, biological vulnerability to infection if exposed, and infrequent use of condoms.^{3,4}

Given the high rates of infection despite an effective prevention method (male condoms), other methods of STI prevention are in development. Topical microbicides are female-controlled products that would be used within the vagina or rectum to prevent acquisition or transmission of STIs and possibly prevent conception. A wide range of compounds are currently in various stages of development. The list is continually changing as new compounds are developed and others are rejected.⁵ Topical microbicides would have appeal because women could initiate and theoretically control their use. Initially, there was much focus on the female-initiated aspect of these products and the potential to use them without partners' knowledge or consent.⁶⁻⁸ However, there is some concern that it may not be possible to develop a product that can be used without detection,^{8,9} and certainly, women have commented that they would discuss or have discussed with a partner the use of these products.⁶⁻¹³

Previous research has shown that relationship characteristics have been associated with condom and contraception use. Some relationship characteristics, such as communication and relationship satisfaction, have been associated with an increased use of contraception.^{14,15} However, other characteristics, such as the length of the relationship, have been associated with a decrease in use of condoms.¹⁶ It is important to examine how these partner characteristics influence microbicide use. Thus, the specific purpose of this study was to examine the connections among the characteristics of relationships (length, monogamy, quality, satisfaction, location of intercourse); the characteristics of partners (job/school, level of substance use); and the use of microbicide-like products among adolescents. Although it is not yet possible to examine these associations in the context of a "real" microbicide, it is possible to explore them in studies of microbicide-like products. Even though the study was based on a hypothetical product, several of these relationship qualities may have an effect on real use, and this knowledge can help to develop initial programs that will foster use once microbicides are available.

Methods

Procedure

We studied 208 sexually experienced adolescent girls between the ages of 14 and 21. They were recruited to participate in a 6-month study to examine the acceptability and use of a microbicide-like product. The study has been described in detail previously,¹⁷ as have predictors of using the microbicide.¹⁸ Of those 208 participants, 95 were under the age of 18. A convenience sample of young women between 14 and 21 years of age were recruited from school-based health clinics, local colleges, and referrals and asked to participate in a 6-month study examining the acceptability and use of a microbicide-like product. They participated in three face-to-face-interviews at intake, at 3 months, and at 6 months. At the intake, the young women were offered Replens Vaginal Moisturizer (Warner Wellcome, Morris Plains, NJ); a gel-filled applicator; and/or Lubrin Insert (Bradley Pharmaceuticals, Fairfield, NJ), a suppository they were to try to use when they had sexual intercourse. They received \$30 for their time and participation in each of the interviews.

The study was approved by the Institutional Review Board at the University of Texas Medical Branch in Galveston, Texas. Consent was obtained from young women who were older than 18 years of age, and for younger ones, both assent and parental consent were obtained.

At the 3- and 6-month visits, participants were asked specific information about their partners and their relationships over the past 3 months. Many of the participants had several partners. Thus, for the purposes of this article, when a participant reported using a product, the first partner with whom she used the product and had reported information was chosen. For those who did not report using a product, then the first partner for whom they provided information was chosen.

Measures

Demographics information (age, race) about the women was collected at intake. Relationship characteristics used in this analysis were collected from the face-to-face interviews at 3 or 6 months. It should be noted that not all the participants attended both the 3- and 6-month visits. Therefore, some of them had data from just the 3-month visit, some had data from just the 6-month visit, and some had data from both the 3- and the 6-month visit. Each participant was asked to describe her relationship with her partner, and those descriptions were used to classify the type of relationship. For purposes of the current analyses, the types of relationships were dichotomized as “significant romantic relationship” (boyfriend/girlfriend/spouse) or any other type of relationship, including “baby's father,” “friend with benefits,” ex-relationship with sexual intercourse, client, and potential romantic partner. The relationships were also classified in terms of whether or not they had broken up at the time of the visit. The participants who were in relationships that were currently broken up or of a nonsignificant status were not asked to answer all the questions retrospectively.

Length of time in the relationship was coded in days on the bases of the young women's reports. Monogamy was coded based on two variables: the type of the relationship and whether she or her partner had ever seen anyone else while they were together. When asked about the partner's monogamy, the woman was given a choice of yes, no, or not sure. When a young women who had a “significant romantic relationship” and answered no for herself and her partner, her relationship was considered to be monogamous, as were the few who had “friends with benefits” when they reported that neither they nor their partners had seen anyone else.

For the purposes of examining the bidirectional sharing of feelings and thoughts in the support of psychological growth within a relationship (mutuality), the Mutual Psychological Development Questionnaire scale was used.¹⁹ The scale is divided into two sets of 11 items, with one set assessing how responsive the young women is to her partner's needs and the other set assessing how responsive her partner is to her needs (e.g., pick up on my partner's feelings, show an interest). They rated the items on a 6-point Likert scale (never, rarely, occasionally, more often than not, most of the time, and all the time). Scores on all 22 items were summed and then a mean was calculated. Higher scores are indicative of greater mutuality within the relationship. The scale has demonstrated good inter-item reliability ranging from .89 to .92 and has shown to be correlated with measures of social support, relationship satisfaction, and cohesion (construct validity).¹⁸ The young women were classified into three groups: those who had broken up at the time of the assessment; those with scores below the mean for this sample on the mutuality score or who were in nonsignificant relationships; and those with scores above the mean for the mutuality score, regardless of relationship type.

The young women whose relationships had not broken up were asked to rate their satisfaction with the relationship on the following Likert scale: not satisfied, somewhat satisfied, satisfied, and very satisfied. For purposes of analyses, young women were classified as broken up or not satisfied, somewhat satisfied to satisfied, or very satisfied.

With regard to where the couple typically had sex, they were classified as having sex at her or their home, his house or another private place, or a public place.

The participants were asked whether or not their partners were in school and whether or not they held jobs. The partners were classified as being in school and/or having jobs, or neither. They also were asked about their partners' frequency of cigarette, marijuana, and alcohol use. For purposes of analyses, the partners were classified as reporting no use of any of these substances; reporting minimal use of one or more (in the past 30 days, 1 to 10 days of smoking cigarettes, 1 day of drinking five or more drinks, and 1 to 2 times of smoking marijuana); or reporting more frequent use of any of these substances.

Microbicide-like product use was defined as ever using it with a partner about whom we had partner specific information. If a participant used the product "ever" with a partner, then she was classified as having used it.

Statistical Methods

The predictors were tested in logistic regression models. The predictors that were significant at the $P < 0.10$ level were then included in a multivariable logistic regression model. The variable selection strategy of backwards elimination was implemented to choose a final model, with $P < 0.05$.

Results

There were 166 young women who reported on partners¹² and reported on the use of the product in the context of intercourse. Of these women, 118 reported using the product, and 48 did not use the product. For six of the young women, the partner they described was a female; however, use was proportionally similar (4 of the 6 used the product). Participants occasionally had missing data, usually because of interviewer error. The question regarding where they had sex contained the most missing data ($N = 54$). Demographic information about the 166 women is presented in Table 2.

All of the bivariate analyses evaluating the characteristics of the relationship were significant at the $P < .10$ level (see Table 2). Those who had been in a relationship for a longer period of time were more likely to have used the microbicide-like product. Those who were in monogamous relationships were more likely to have used the microbicide-like product. The participants who had broken up were less likely to use the microbicide-like product than those in more mutual relationships. Satisfaction also was significant; those to use the microbicide-like product. The adolescents who had sex in the girl's or the couple's home were the least likely to use the microbicide-like product, followed by those who had sex in other private places. With regard to the characteristics of the partner, there was no relationship between whether the partner had a job or was in school or their level of substance use and whether the microbicide-like product was used.

Multivariable logistic regressions with backwards elimination were conducted with the length of the relationship, monogamy, mutuality, relationship satisfaction, and where the couple had sex. The only variable that stayed in the model was relationship satisfaction (Wald $\chi^2 = 10.3$, $P < .01$, CI 1.20, 3.10).

Discussion

Although microbicides are being developed as a female-initiated method, use will take place within a relationship. Condom use has been shown to be related to aspects of relationships,^{16,20,21} and willingness to use a microbicide is more common among those

without main sexual partnerships.²² Thus, understanding the relevant characteristics of sexual relationships in relation to microbicide use will be important, and the specifics of the associations may differ because the characteristics of the two methods differ. For example, condoms may be viewed as decreasing intimacy; whereas the additional lubrication provided by microbicides may be viewed as enhancing pleasure.^{8,9,13,22,23}

In the context of using a microbicide-like product without protective qualities and as part of a research project, those young women who were in “better” relationships were more likely to use the product. This may merely reflect that the reason the participants used the microbicide-like product was because of their participation in a research study, because a study of willingness to use a microbicide found greater willingness in those in non-main partnerships than in main partnerships.²⁴ On the other hand, it may reflect the young women's ability to actually integrate a method into sexual behaviors. Studies have found that better sexual communication in a relationship is associated with greater protection.²⁵ It may be that young women who perceive their relationships as more satisfying and mutual may have better communication with their partners, so they are able to communicate regarding STI prevention. If that is the case, then microbicides may not provide protection to those women who need it the most. It is also possible that topical microbicides may suffer the same pitfall as condoms, which is that condom use decreases as the length of relationship increases. Interventions may have to stress the importance of continued use, even as the relationship gets stronger (more trustworthy, mutual, and satisfying).

This study is limited by the fact that it was a convenience sample of young women using a hypothetical measure. In addition, the measures of relationship quality were not assessed at the time of use. Thus, some of the women who had broken up at the time of the assessment might have described themselves as satisfied or in a mutual relationship at the time of intercourse. The participants were compared to each other rather than to themselves in different relationships. In addition, if a couple used the microbicide-like product at least once, they were considered to be users. Studies of condom use demonstrate that even in the context of one relationship, condom use changes over the course of time.¹⁵ Thus, as strategies are developed to enhance use, there has to be a focus on both initial use and continued use. Beyond an assessment of risk or need for a protective method, it appears that both males and females will compare these products to condoms, and that a positive perception in comparison to condoms may be important for initial use.²⁶ However, those who have had experience with using protective measures and who have figured out how to integrate coitally-dependent methods into their sexual lives may be more likely to sustain use. The additional lubrication may be a motivator for both use and sustained use; however, it is not known whether the sexually inexperienced young adolescent will be able to anticipate this benefit. Thus, future studies will have to examine the dynamics and types of relationships in developmental contexts because they relate to both initial and sustained use.

Finally, although it did not remain in the final model, the adolescents who were typically having sexual intercourse in their own spaces were more likely to use the product. It is not possible to tell whether this was because those couples always had the product available or because couples having intercourse in their own spaces had more stable relationships. In either case, it points to the need to help adolescents and young adults think through the practicalities of use to ensure that intentions can lead to behavior.

As microbicides are developed and tested, it will be critical to assess the attitudes of partners and the impact of the relationship on the likelihood of use. Microbicides hold promise for providing greater options to young women and couples, but their availability will not eliminate the need to develop interventions that will help adolescents to develop healthy

romantic relationships and to communicate with their partners regarding sexual decision making.

Acknowledgments

The authors thank The Teen Health Center and Galveston College for helping with recruitment; Elissa Brown, Stephanie Ramos, Jennifer K. Oakes, and E. Alexandra Zubowicz for their support in data collection and data management; and all of the adolescents 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 (U19A161972, and N01 A150042) of the National Institutes of Health. Studies were conducted at 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

- Centers for Disease Control and Prevention: STD Surveillance. [February 14, 2008] Special Focus Profiles: Adolescents and Young Adults. 2004. <http://www.cdc.gov/std/stats/adol.htm>
- Weinstock H, Berman S, Cates W. Sexually transmitted diseases among American youth: Incidence and prevalence estimates, 2000. *Perspect Sex Reprod Health*. 2004; 36:6. [PubMed: 14982671]
- Gevelber MA, Biro FM. Adolescents and sexually transmitted diseases. *Pediatr Clin North Am*. 1999; 46:747. [PubMed: 10494255]
- Biro FM. Adolescents, sexual activity, and sexually transmitted infections. *J Pediatr Adolesc Gynecol*. 2007; 20:219–20.
- Green G, Pool R, Harrison S. Female control of sexuality: Illusion or reality? Use of vaginal product in southwest Uganda. *Soc Sci Med*. 2001; 52:585. [PubMed: 11206655]
- Alliance for Microbicide Development. [January 23, 2009] Microbicide pipeline. http://www.microbicide.org/cs/microbicide_pipeline
- Howett MK, Kuhl JP. Microbicides for prevention of transmission of sexually transmitted diseases. *Curr Pharm Des*. 2005; 11:3731. [PubMed: 16305508]
- 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.
- Bentley ME, Fullem AM, Tolley EE, et al. Acceptability of a microbicides among women and their partners in a 4-country phase I trial. *Am J Public Health*. 2004; 94:1159. [PubMed: 15226137]
- Auslander BA, Perfect MM, Breitkopf DM, et al. Microbicides: Information, beliefs, and preferences for insertion. *J Womens Health*. 2007; 16:1458.
- Koo HP, Woodsong G, Dalberth BT, et al. Context of acceptability of topical microbicides: Sexual relationships. *J Soc Issues*. 2005; 61:67. [PubMed: 21822334]
- Short MB, Ramos S, Oakes JK, et al. Adolescent girls' communication with partners about microbicide use. *Sex Health*. (in press).
- Zubowicz EA, Oakes JK, Short MB, et al. Adolescents' descriptions of the physical characteristics of microbicide surrogates and experiences of use. *J Womens Health*. 2006; 15:952.
- Manlove J, Ryan S, Franzetta K. Contraceptive use patterns across teens' sexual relationships: The role of relationships, partners, and sexual histories. *Demography*. 2007; 44:603. [PubMed: 17913013]
- Widman L, Welsh DP, McNulty JK, et al. Sexual communication and contraceptive use in adolescent dating couples. *J Adolesc Health*. 2006; 39:893. [PubMed: 17116521]
- Fortenberry JD, Tu W, Harezlak J, et al. Condom use as a function of time in a new and established adolescent sexual relationships. *Am J Public Health*. 2002; 92:211. [PubMed: 11818293]
- Short MB, Perfect MM, Auslander BA, et al. Measurement of microbicide acceptability among U.S. adolescent girls. *Sex Transm Dis*. 2007; 34:362. [PubMed: 17038964]
- Short MB, Succop PA, Ugueto AM, et al. Predictors of using a microbicide-like product among adolescent girls. *J Adolesc Health*. 2007; 41:357. [PubMed: 17875461]

19. Genero, NP.; Miller, JB.; Surrey, J. The mutual psychological Q1 development questionnaire..
20. Cushman LF, Romero D, Kalmuss, et al. Condom use among women choosing long-term hormonal contracep- Q2tion. *Fam Plann Persp.* 1998; 30:240.
21. Sayegh MA, Fortenberry JD, Shew M, et al. The development association of relationship quality, hormonal contraceptive choice and condom non-use among adolescent women. *J Adolesc Health.* 2005; 39:388. [PubMed: 16919801]
22. Morrow KM, Fava JL, Rosen RK, et al. Willingness to use microbicides varies by race/ethnicity, experience with prevention products, and partner type. *Health Psychol.* 2007; 26:777. [PubMed: 18020851]
23. 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. [PubMed: 10942354]
24. Mason TH, Foster SE, Finlinson HA, et al. Perspectives related to 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. [PubMed: 14707531]
25. Rickman RL, Lodico M, DiClemente RJ, et al. Sexual communication is associated with condom use by sexually active incarcerated adolescents. *J Adolesc Health.* 1994; 15:383. [PubMed: 7947852]
26. Holmes WR, Maher L, Rosenthal SL. Attitudes of men in an Australian male tolerance study towards microbicide use. *Sex Health.* 2008; 5:273. [PubMed: 18771643]

Table 1

Demographic Information of Predictor Variables

	Mean	Percentage (%)
Age	18 years, (range 14-21)	
Race/ethnicity		
African-American		39
Hispanic		34
Non-Hispanic Caucasian		27
Length of relationship days	606	
Monogamy		
Monogamous		44
Nonmonogamous		55
Mutuality		
High mutuality		37
Low mutuality		38
Broken up		25
Satisfaction		
Very satisfying		41
Somewhat satisfying		30
Unsatisfying/Broken up		29
Where they had sex		
Partner's room/private place		52
Their room		43
Public place		5
Going to school/having a job		83
Substance use		
No use		26
Minor use		6
Frequent use		68

Table 2

Significance of Predictors

	Chi-Square	P value	Confidence Interval
Length of relationship	3.24	.07	1.00, 1.00
Monogamous	5.42	.01	1.14, 4.85
Mutuality	10.78	<.01	.30, .74
Satisfied	11.95	<.01	.30, .72
Where they had sex	3.86	.05	1.00, 3.31