

Young women's use of a microbicide surrogate: The role of individual and contextual factors in acceptability and sexual pleasure

By: Amanda E. Tanner, Greg Zimet, J. Dennis Fortenberry, Michael Reece, Cynthia Graham & Maresa Murray

[Tanner, A. E.](#), Zimet, G. D., Fortenberry, J. D., Reece, M., Graham, C. A., & Murray, M. (2009). Young women's use of a microbicide surrogate: The role of individual and contextual factors in acceptability and sexual pleasure. *The Journal of Sex Research*, 46(1), 15-23.

This is an Author's Original Manuscript of an article whose final and definitive form, the Version of Record, has been published in the Journal of Sex Research, 2009 [copyright Taylor & Francis], available online at:
<http://www.tandfonline.com/10.1080/00224490802398407>.

Abstract:

Currently in clinical trials, microbicides have historically been promoted as a woman-controlled (although more recently woman initiated) method of sexually transmitted infection (STI) prevention. The contradiction that exists in this rationale is that women's bodies, specifically the genitals, have been constructed as a negotiated space within sexual interactions. This study qualitatively explored the factors influencing 40 young women's use of a vaginal moisturizer (VM), utilized as a microbicide surrogate. The results indicated that use of the VM was dependent upon product characteristics (i.e., the lubricating qualities affect on sexual pleasure, timing of insertion), individual factors (i.e., reproductive health goals, experiences with side effects of existing contraceptive methods), and contextual factors (i.e., social norms). An understanding of these bodily and social issues may be beneficial in designing targeted educational campaigns and effective instructional materials as well as in facilitating positive dialogue around women's bodies and their sexuality.

Keywords: adolescents | adolescent women | vaginal microbicides | sexual behavior | sexual health

Article:

The desire for a woman-initiated disease prevention method has increased the attention on vaginal microbicides as a method for the prevention of sexually transmitted infections (STIs), including human immunodeficiency virus (HIV). Microbicides are substances that may reduce transmission of STIs (Wulf, Frost, & Darroch, 1999) and may also prevent pregnancy, although not all microbicides will be contraceptive (Harrison, Rosenberg, & Bowcut, 2003). Currently there are more than 30 microbicide formulas in differing phases of clinical trials, including two products in the final phase of clinical trials (Alliance for Microbicide Development, 2007). Development delays have primarily been attributed to the complex physiology of the vaginal

environment and research funding mechanisms (Global Campaign for Microbicides, 2007). Similar to spermicides, which have shown a range of acceptability (Elias & Coggins, 2001), including women's discontent with timing of insertion (Raymonda et al., 2005), microbicides would be inserted into the vagina at each coital event. In addition to prevention properties, microbicides may impact sexual comfort and pleasure, as most formulas will have lubricating qualities (Braunstein & Van de Wijgert, 2005; Philpott, Knerr, & Maher, 2006; Zubowicz et al., 2006). Therefore, microbicides offer a unique compromise between the reduction of infection risk and potential influence on sexual performance and pleasure.

Historically, microbicide development has been situated in the need for a woman-controlled method of protection against STIs, as it is suggested that underlying gender inequalities limit women's abilities to protect themselves and ensure condom use (Elias & Heise, 1994; Potts, 1994; Stein, 1990). Thus, the anticipated arrival of microbicides, a woman-controlled method, is considered by many to be a significant advancement in public health's efforts to control STI and HIV incidence. An inherent contradiction exists, however, in the promotion of a “woman-controlled” method to be used by a woman for the protection of her own body. The rationale for microbicide development has been based on the assumption that women have less control than men in sexual decision making (Pulerwitz, Amaro, De Jong, Gortmaker, & Rudd, 2002). In suggesting that women actually do not have control of their bodies or their sexual behaviors, this argument implies that women may not, in fact, be able to effectively adopt a woman-initiated method. Much research has documented a gendered power imbalance in heterosexual relationships, for example, in terms of sexual and contraceptive negotiation and violence (Blanc, 2001), which will be problematic for women as they negotiate and use microbicides within this relational context. Recent work in the United States has indicated, however, that some women describe more equal relational power dynamics and feel in control of their sexual bodies (Carpenter, 2002; Harvey, Bird, Galavotti, Duncan, & Greenberg, 2002). Thus, microbicides—if they become available—may be helpful in facilitating dialogue around these gender power issues, at least in the United States.

To more fully understand how microbicides may (or may not) be used, it is essential to understand how people, more specifically women, negotiate heterosexual norms. The social rules governing relationships often transform women's bodies into a shared space. The physical requirements of heterosexual intercourse (vagina accepting the penis) suggest that a woman's body, specifically her genitals, becomes a cooperative space where others, primarily male partners, have significant influence on how the space is defined. This is particularly relevant in the context of previous research suggesting women's sexual motivation is often based on a desire to please their male partners (Nicolson & Burr, 2003). The construction of women's bodies as a shared space suggests that women's preferences for microbicides need to be situated within the social context in which they will be used.

Research on young women's sexuality has generally adopted a deficit approach. It has problematized their (hetero)sexual behavior and reduced their sexuality to the potentially

negative outcomes, such as unintended pregnancy and STI (for a critique see Fortenberry, 2003). Additionally, existing research has largely focused on the individual woman and ignored the broader cultural context in which her sexual behaviors occur. The intersection of multiple identities for young women—gender, ethnicity, age, and socioeconomic status—all play a role in how young women negotiate their sexuality, sexual behaviors, and contraceptive use (Dworkin, 2005; Orbach & Fine, 2003; O'Sullivan & Meyer-Bahlburg, 2003). A consequence of the problem-based approach to research on young women's sexual behavior is that little work has been conducted on their sexual pleasure (Welsh, Rostosky, & Kawaguchi, 2000) or sexual desire, suggesting a “missing discourse of desire” for young women (Fine, 1988; Fine & McClelland, 2006).

Microbicides will be unique in having disease prevention properties and characteristics that may positively impact sexual performance, pleasure, and comfort. These qualities offer a catalyst to shift research on young women's sexuality from a problem-based to a broader gender and sexuality perspective. This broader approach is needed in microbicide research to provide a positive construction of young women's sexuality while at the same time examining the benefits of protection. Several researchers have suggested that it is time to address the overall healthy sexual development of young people (Tolman, 2006; Welsh et al., 2000). Welsh and colleagues (2000) proposed a framework including personal characteristics and ecological variables (i.e., culture, family and peer environments) as factors influencing young women's sexual behavior. The consideration of these factors is essential, especially for future microbicide use and acceptability, as social and cultural norms have considerable effects on sexual behaviors.

In order to address the complex integration of a microbicide into the sexual repertoire of young women, it is important to understand the meanings associated with their bodies, sexual behaviors, sexual partners, and the product. Symbolic interactionism and sexual scripting theory are useful in framing how women associate meanings across a variety of contexts (Gagnon, 1990; Gagnon & Simon, 1973; Longmore, 1998; Plummer, 2003). Symbolic interactionism focuses on shared understanding and is useful in considering the value that young women may place on microbicides (Longmore, 1998; Plummer, 2003). Sexual scripts exist at three different levels: intrapsychic, interpersonal, and cultural scenarios and allow individuals to determine the appropriate sequence of sexual interactions (Gagnon, 1990; Gagnon & Simon, 1973). These frameworks allow women to construct the role that sex plays in their lives and how these constructions are fluid depending on the physical and social environments. An understanding of how the sociocultural contexts influence sexual behavior scripts is useful in considering how microbicides may (or may not) be utilized in sexual interactions.

The purpose of this study was to examine qualitatively the influence of specific factors on young women's use of a microbicide surrogate, a vaginal moisturizer (VM). As microbicides are not yet approved, some previous research has utilized VMs as surrogates for microbicides (i.e., Zubowicz et al., 2006) in order to assess the behavioral correlates of use above and beyond hypothetical product assessment. The specific aims of this study were to examine how factors

related to individual and social characteristics as well as features of the product might affect use and sexual pleasure. A better understanding of the factors influencing use of a microbicide surrogate will be useful in the promotion of future microbicides.

Method

This study was part of an ongoing longitudinal study of young women's sexual health and behaviors with women recruited from urban community-based clinics in a large Midwestern city. The areas served by these clinics are characterized by high rates of STIs (Centers for Disease Control and Prevention [CDC], 2005) and early child-bearing (Ventura, Matthews, & Hamilton, 2002) and low rates of HIV (Chicockin, 2008). All study protocols were approved by the university's Institutional Review Board.

All women participating in the larger project, who were currently using the VM (N = 133), were invited to participate in this study component. Study recruitment continued until saturation was reached (Weiss, 1994), which resulted in a subsample of 40 young women over the age of 18. Written informed consent was obtained from each woman. Since microbicides are currently in clinical trials and therefore not yet commercially available, participants were asked to use a commercially available VM as a microbicide surrogate with each coital event for a 4-week period. The VM (Silken Secret by Astroglide®, BioFilm, Inc.©) was packaged in individual 5 mL applicators. Although other available products may more closely resemble microbicide candidate properties, this product was used because its water-based property ensured safety when used with condoms. There are distinct similarities between the VM in terms of physical characteristics (i.e., smell, lubricating properties), with formulations of microbicides under development. Women were asked to use the entire individually packaged application of the VM with each coital event over the course of the study period. As we were interested in using the VM as a VM surrogate, the VM instructions were for vaginal intercourse; none of the participants asked questions regarding use with other activities (e.g., anal sex), but a few mentioned concerns with application before oral sex. Specific information was given about the VM, emphasizing that it did not have any disease prevention or contraceptive properties.

As required by the larger study protocol, the young women were randomized into three different timing conditions for VM application to mimic possible microbicide specifications (1 hour precoitus, 5–10 minutes precoitus, or 5–10 minutes postcoitus). In addition, structured daily diaries were completed each day of the 4-week period, even if the VM was not used, to obtain information related to demographics, VM use patterns, participation in sexual activity, and partner-specific information (i.e., perceptions of partners' assessment of VM). Over the course of the larger study (approximately 36 months), all women will complete each 4-week timing condition twice.

At the completion of a VM cycle, 45 individual interviews were conducted with 40 young women. Of these, 40 were conducted following the women's first or second VM cycle, and an

additional five follow-up interviews were conducted 6 months later following the subsequent VM cycle to obtain a more even distribution across timing conditions. None of the women invited declined to participate, although an additional woman was recruited as one woman was unable to attend her interview. Participants did not receive compensation for the interview or for using the VM but received a \$3 per day stipend for completing the structured diaries.

Study Participants

Participants were 40 young women between the ages of 18 and 23 years ($M = 19.5$ years, $SD = 1.4$). Of these women, 85% ($n = 34$) were African American and 15% ($n = 6$) were Euro-American. Most of the women were attending high school (17.5%, $n = 7$) or had graduated/obtained their GED (32.5%, $n = 13$). An additional 20% ($n = 8$) were pursuing higher education, and 17.5% ($n = 7$) had dropped out of high school. About half of the women (47.5%, $n = 19$) had one or more children at the time of the interview.

The women were distributed across the different VM timing conditions. At the initial interview, 17 (42.5%) women were in the 5–10-minute precoital condition, 14 (35%) were in the 5–10-minute postcoital condition, and nine (22.5%) were in the 1-hour precoital condition. At follow-up, three women (60%) were in the 1-hour precoital condition and one woman (20%) each were in the 5–10-minute pre- and postcoital conditions. Over half (55%, $n = 22$) had used the VM in multiple cycles over the course of the larger study. The majority (92.5%, $n = 37$) of the women had used the VM during the 4-week period prior to the initial interview, and all five had used it at the follow-up interview. Of the three women who had not used it during the month before the interview, two had used it in a previous cycle and only one had never used the VM. The women used the VM with 107 of the 164 (65.2%) reported coital events, with condom use reported for 53 (32.3%, $n = 53$) of these events.

Data Collection and Study Measures

Demographic data were collected via the larger study protocol (see Fortenberry et al., 2005). The qualitative interviews were conducted by the first author (a 28-year-old Euro-American woman) with the 40 young women. In order to increase comfort in discussing sexuality-related topics and reduce the likelihood of socially desirable responding, all interviews were conducted at a confidential location of the women's choosing (i.e., her house, friend's house). All names have been changed to pseudonyms to protect the women's identities. Interviews lasted on average about 30 minutes (range 16–51 minutes).

The interview guide was developed utilizing symbolic interactionist (Longmore, 1998) and sexual scripting theory (Gagnon & Simon, 1973) constructs. The authors, with feedback provided by seven of the research staff from the larger study, developed the interview guide, which was composed of open-ended questions designed to elicit information about young women's experiences with the VM. Interview guides were tested with an ethnically diverse group of four research assistants, including women the same age and race (African American and Euro-

American) as the study sample. Topics discussed during the interview included experience using the VM (e.g., What were your reasons for deciding not to use the VM?), assessment of the VM (e.g., Did the VM make sex feel different?), and contextual factors influencing use (e.g., What do/would your family think about you using the VM?).

Data Management and Analysis

To assess the demographic variables, descriptive statistics were conducted using SPSS 14.0 (SPSS, 2006). The interviews were digitally recorded and transcribed verbatim. Management and analysis of the interview data were conducted with the assistance of Atlas ti 5.0 (Muh, 2004). Content analysis identified themes related to VM use based on emergent themes (Weiss, 1994). In addition to the first author, two research assistants, both young Euro-American women the same age as the participants, participated in the data analysis component to increase reliability of the analysis. Independent codings were compared and indicated high consistency among raters, with any discrepancies resolved via discussion. After reviewing multiple potential quotes for relevance, clarity, context, and brevity, quotes are presented that best represented the emergent themes illustrating the commonalities and individual variation among the young women.

Results

Overall, there was substantial variability in young women's stated acceptability of the VM. Most women ($n = 25$, 62.5%) evaluated the VM as “okay” or neutral, seven (17.5%) assessed it very positively, five (12.5%) had negative evaluations, and three (7.5%) had not used the VM during the 4 weeks prior to the interview, with one woman never using it. Some women reported that they would be uninterested in using a microbicide because they did not like the concept, like Dorothy (18) who thought “it [VM] was weird.” In addition, one woman was adamant about not using the VM because “I don't like that kind of stuff. Putting stuff in me, it's nasty to me” (Nicole, 18). On the other hand, some women who were initially hesitant exclaimed, “Yes, I do like using it!” (Danielle, 18) and “I can't wait for it [microbicides] to come out!” (Crystal, 18).

Three themes that reflected individual and contextual factors that were associated with VM use emerged from the data. The themes influencing young women's acceptability and use of microbicides were related to preferences regarding product characteristics as well as individual and contextual factors.

Product Characteristics

Young women's personal assessment of using the VM was influenced by specific product characteristics, including the lubricating qualities and the timing of use.

Lubricating qualities

Many young women conveyed their personal evaluation of the VM in terms of messiness. The messiness was positive for some women, “Yeah, it was cool, it was just messy” (Lisa, 23) and

neutral for others, “Messy but wet, I guess, slippery” (Linda, 22). Several women felt that some of the messiness was due to the product volume, suggesting it was “a whole lot” (Dorothy, 18), which led to some decreasing the amount of VM inserted into the vagina. Some women did not like the “gooshiness” of the VM (Cynthia, 23), while others were accepting of a little bit of “messiness” as the “wetness” or lubricating quality of the VM increased their enjoyment of sex. Danielle (18) evaluated the VM and the intercourse that followed as “messy, very greasy, and better because more wetter from being so greasy.” Karen (21) said, “I thought it was pretty good. It stayed wet, it stayed creamy. I mean, yeah, it was good.” Brenda (21) reported neutrally that the VM “makes you feel like you have moisture in there.” Rose's (20) enjoyment of the lubricating qualities was tempered by the interruption: “I like it [VM] because I be real wet,...but I hate stopping to go put it in.”

The lubricating quality was a highlight for the few women who experienced vaginal dryness during sex. Beverly (22) reported that the VM “makes it [sexual intercourse] easier and adds comfort,” and Gloria (18) appreciated the VM, especially with condoms, as sometimes “it takes a while for your juices to get going.” In addition, a few women mentioned that it helped if they were “not really in the mood for it [sexual intercourse]” (Cynthia, 23). The discussion of increased lubrication associated with VM use was generally a positive or neutral influence on young women's sexual experience.

Timing of VM use

The ease or difficulty associated with VM use was often dependent on the women's assigned timing condition (i.e., one hour precoital, 5–10 minute precoital, or 5–10 minutes postcoital). Over the course of all the interviews, most of the women ($n = 26$, 65%) had used the VM in multiple timing conditions and were able to compare experiences associated with timing of insertion. The ability for some of these young women to plan for sex or know when it may occur was limited. Therefore, for many women it seemed an unrealistic requirement to use a microbicide an hour before sex. Evelyn (21), like other women, suggested that use would be best “maybe 10 minutes before or something like that, but no more than a half an hour before.” Some women felt that even this timing window would be unacceptable because “nobody knows 5–10 minutes before they are going to have sex, I don't think sex is planned” (Deborah, 20). In addition, Melissa (18), who used the VM for the second time in the 1-hour precoital condition, reported, “I didn't like it [this time] at all, it was like it had too much that had to be planned in order to do it right.”

Women were concerned not only about planning for sex but also about the disturbance to the sexual interaction: “It interrupts everything!” (Melissa, 18). This was especially an issue with application that required waiting a certain amount of time before having sex as it interrupted the flow of the sexual event, “because you don't know when you're going to be doing it; sometimes it just happens. I mean, I'll be in the mood and then be like, ‘hold on, give me 2 minutes’” (Mary, 18).

Several women discussed the coitus-dependent nature of VM, with a few appreciating the event-specific use of a microbicide compared with other methods that “you got to take everyday” (Gloria, 18). Other women wanted to separate use from the event altogether: “It’s easier [than condoms], as you could do it an hour before sex and wouldn’t have to worry about it” (Elizabeth, 19). Another woman, however, suggested waiting would be challenging: “An hour later you would be like, ‘Forget it. I don’t even want to anymore,’” (Deborah, 20). This separation was more appealing to women who struggled with communicating about use, like Denise (19) who would prefer postcoital application because it is “hard to talk presex and easy to use after because women wouldn’t have to talk.” Concerns existed, however, with postcoital application, including not wanting to get up afterward to use it (e.g., “Some people aren’t going to remember, ‘Oh, I’ve got to get up and put it in,’” Deborah, 20) and not having the lubricating and prevention benefits of the product (e.g., “Afterwards would be kind of weird, because that would, that would defeat the purpose.” Patricia, 20).

The perceptions of effectiveness of potential microbicides were also affected by the timing of application. Many women indicated that a microbicide used before sex would be the only way it could be effective, “if it’s meant to use against STDs, don’t you think [before], yeah” (Sandra, 20). Lisa (23) felt that “Five to 10 minutes afterwards, that would be too much time for something to start manifesting to start to protect yourself.” Others, however, thought that a postcoital application would be a better option as it would “catch whatever is in there” (Patricia, 20). The fact that the women were using a product that did not actually have prevention characteristics influenced use with some women not using it much during the study but reporting that if it had prevention properties they would “definitely use it” (Virginia, 19) and “use it a lot” (Patricia, 20). Another woman added, “I think it would be cool to use if it were like a real contraceptive, ‘cause it was easy. You just twist it [put it into the vagina with the applicator]” (Melissa, 18).

Individual Factors

Young women’s use of the VM was frequently dependent upon individual factors, including their reproductive health goals and their sexual contraceptive experiences.

Reproductive health goals

Pregnancy was a salient issue to all of the women, regardless of whether they were trying to conceive or to prevent pregnancy. Thus, interest in specific microbicide formulas was clearly influenced by their reproductive health goals. The presence of children had a strong impact on attitudes toward potential microbicide use. About half of the women interviewed had children at the time of the interview. For these women, the opportunity to engage in sex and use the VM was limited, “That’s what it is, because I don’t exactly know when because kids....It makes it harder to actually plan it [sexual intercourse]” (Patricia, 20). In addition to the impact of the presence of children on the ability to use the VM, current reproductive health goals of the young women

influenced their interest and motivation to use a microbicide. Motivation and adherence to current contraceptive methods was heightened for women who already had children and did not want any more: “I gotta baby already, I don't need to be trying to have another one” (Deborah, 20). Women were willing to go to extreme lengths for pregnancy protection; for example, Lisa (23), a mother of two, would opt for triple protection, using the microbicide, condoms, and Depo-Provera®. Conversely, other women would prefer to use their current method of contraception, like Helen (19), a mother of one, who was uninterested in using a microbicide as she was satisfied with her use of the patch.

For women who did not currently have children, pregnancy prevention remained a salient issue. For instance, Regina (19) indicated an interest in microbicides with contraceptive properties, “Because I wouldn't wanna get pregnant and I wouldn't wanna use my condoms.” Several women had very personal experiences that increased their attention to pregnancy prevention, including one woman who had lost a 4-week-old son when she was 18 and another woman who recently experienced a miscarriage. These women were particularly interested in microbicides with pregnancy prevention properties.

For women who reported, “We're actually trying to get pregnant” (Gloria, 18), there was a low level of interest in microbicides with contraceptive properties. Sexually transmitted infection (STI) prevention, however, remained important for these women. Barbara (19) was interested in a specific microbicide formula: “Not with the pregnancy for me, but the STDs, yes,” as she was actively trying to get pregnant. Beverly (22) was also still interested in the disease prevention properties of a microbicide even though she was married and had undergone tubal ligation after the birth of her fourth child.

Side effects of available methods

The majority of women discussed issues related to side effects of existing contraceptive and disease prevention methods. The negative experiences associated with use of existing, particularly hormonal, methods increased perceived attractiveness of a microbicide for some women in comparison to existing methods. Many women, even those with a neutral or negative assessment of the VM, thought that a microbicide would be easier because “It's like a one-step process instead of remembering to count the days and stay on track with the birth control and always using a condom” (Linda, 22). Cynthia (23) summarized some of the women's opinions about future microbicide use: “Yes, I believe every female would probably be interested in that as long as it had no side effects to it.”

Side effects were discussed in terms of the depot medroxy-progesterone acetate (Depo-Provera®) injection and spermicides: “Well, I took the shot one time and I gained 30 pounds, and then I can't use spermicide because it irritates you” (Evelyn, 21); oral contraceptives and the patch: “The pill, I got pregnant on the pill. The patch I don't like. It irritates my skin; it makes my stomach hurt” (Jessica, 19); and condoms: “Condoms sometimes they break, anything can

happen” (Linda, 22). Some women reported being dependent upon condoms for pregnancy and disease prevention, while other women felt that condoms decreased sensation, stating they “take out the feeling; it doesn't feel the same” (Sherry, 20). There was a preference among some women for a microbicide over condoms to enhance the physical sensation. This was true even for women like Jessica (19), who did not really like the VM but indicated interest in use to increase sexual sensation that was reduced for her (and her partner) by condom use.

Sexual experiences

Sexual experiences contributed to young women's motivation to use the VM. There was marked variability in how women discussed their sexual decisions and experiences. A few women described their experiences as very positive, emphasizing pleasure and reciprocity, while others' experiences clearly fell into traditional discourses about young women's sexuality. Many women reported that they enjoyed sex immensely; however, they also often indicated that they engaged in sex even when they were not in the mood. This was highlighted by a woman who recently had a miscarriage, but continued to feel the need to participate in sexual activity. She reported, “Sometimes I'm not really feeling it. We try to work it out with me giving him oral sex....I understand that he wants to do what he wants to do, but I also have my own feminine problems” (Melissa, 18). This negotiation process suggests that in a heterosexual context some women may not always feel that they have the ability to say no (or yes) to sex.

The necessity for women to engage in sex and the social construction of marriage as the appropriate context for sex in order to protect themselves was illustrated by Angela (19):

And I tell them [my cousins], sex can wait, it's not that important. What if they end up, wound up pregnant or with a disease that they can't get rid of and then what? People should wait to have sex until they're older or until they're married. I wish I was still a virgin. I wish I would've waited until I was married to even think about having sex.

A woman's control of her body was crucial and as such decisions were carefully made to protect reputations: “I didn't make myself as a whore. I didn't make myself letting everybody know I was doing it, none of that, so that was the main thing” (Cynthia, 23). The protection of their reputation, and to a lesser extent their body, was viewed as more important for some women than their ability to find pleasure in the interaction.

With young women's desire to protect their reputations and themselves, many were adamant about wanting to use a microbicide when they become available, even if they had a neutral or negative assessment of the VM. This underscored the importance that they placed on self-protection: “So, truthfully, I could care less whether he wanna try it or not. I'm trying to protect myself” (Cynthia, 23). Microbicides were viewed as a way to have control over the prevention method that would allow them to be less dependent on men. Margaret (19) illustrated this idea: “Yes, because you are doing it yourself. Like you could tell someone to put on a condom, but they won't. But you could tell yourself, ‘Okay, I'm gonna use this so I'm gonna use it.’” This

control allowed for a higher level of excitement for a future microbicide: “Oh yes, I'm using it! I'm there. I'm squeezing it every time. I don't care what the man's got to say about it” (Crystal, 18).

Contextual Factors

Social norms and networks were also an influence on VM use, as women's peers strongly influenced their sexual behaviors. The majority of the women engaged in intercourse at the same age as their friends. Danielle (18), for example, “lost her virginity” when she was 15 years old, the day after her best friend. Peer influence was also illustrated by women's indication that their friends would use microbicides if they told them to; for instance, Crystal (18), who really enjoyed using the VM, stated, “And I will let my friends know that it is coming out, ya'll better use it because it's good.” Social support for prevention methods was seen in the dispersion of microbicide knowledge as well as in sharing sexual and contraceptive experiences.

Differences in attitudes toward pregnancy prevention were apparent between women who perceived social support for their pregnancy or not. Several women indicated a pregnancy would be acceptable to themselves, their family, and their partners. Crystal (18) illustrated her family's response to a potential pregnancy:

There's nothing that they can say, because I'm grown. But all of them want me to have a baby. As soon as I turned 18, they were like, “So when are you having a baby?” Because my brother's baby, he just had a baby, and now they're like, “So when are you having a baby?” And I was like, “no time soon.”

The cultural norms surrounding pregnancy created an environment in which motherhood was not only accepted but not having children was highly visible. For instance, Beverly (22) described her friend as “the only 22 year old that I know who doesn't have kids.” Social and cultural norms, in addition to sexual experiences, will likely play an important role in initiation and continued use of microbicides.

Discussion

The purpose of this study was to examine the individual and contextual factors influencing young women's use of a VM, used as a microbicide surrogate, given that these factors may offer insights into future microbicide acceptability and use. Overall, the results suggested that young women had varying levels of interest in VM use and in potential microbicides. Consistent with symbolic interactionism and sexual scripting theory (Gagnon, 1990; Gagnon & Simon, 1973; Longmore, 1998; Plummer, 2003), young women's use of the VM was impacted by their personal understanding and assessment of the VM and was influenced by factors at the individual and social levels. Although issues such as mode and timing of delivery remained salient to the young women's experience with VM use, factors influencing use were not limited

to personal preferences for product characteristics. Also included in the decision-making process were young women's life experiences and situations as well as their sociocultural context.

This research confirms and expands on previous microbicide acceptability research, which focused on the acceptability of specific product characteristics (Coggins et al., 2000; Short, Mills, Majkowski, Stanberry, & Rosenthal, 2003, 2004). While preferences for specific hypothetical product characteristics have been examined, this study allowed for the examination of young women's preferences and negotiation with use of a VM. Additionally, the results illustrated a range in women's willingness and desire to use microbicides, which will be important considerations in microbicide promotion and education once they become available.

Similar to a prior study, several women who reported that the VM was “messy” dealt with this by using less of the product than recommended (Coggins et al., 1998). The VM volume was similar to the microbicides now in clinical trials, chosen for an appropriate concentration of active ingredients and adequate coverage of the vaginal surface. Therefore, while this adjustment allowed women to continue using the VM, it may have implications regarding the ultimate effectiveness of microbicides. In this context, the promotion of microbicide use in conjunction with other methods may help increase overall effectiveness. In general, a wide range of individual variation existed in terms of young women's evaluation of specific product characteristics, highlighting the complicated nature of microbicide acceptability.

Consistent with previous work, several of the young women's evaluations of the VM focused on enhanced sexual pleasure because of increased “wetness” or lubrication (Philpott et al., 2006; Zubowicz et al., 2006). The lubricating quality may keep women (and their partners) motivated to use the product and should be emphasized in microbicide promotion. Given that many women expressed antipathy toward using condoms as they reported a decrease in sexual sensation, microbicides could provide a unique intersection of increasing protection and pleasure allowing women to acknowledge their own sexuality. Microbicides, therefore, have the potential to create an environment ripe for promoting positive, healthy sexual development for young women.

Several of the women mentioned that a lubricating microbicide would be helpful if they were “not in the mood.” Locating a singular physical sign, namely, vaginal lubrication, for sexual arousal does not allow women to fully explore their body's sexual sensations or appreciate their own bodies and sexuality. Existing research has demonstrated that lubrication is only one of the physical changes that women experience when sexually aroused and not necessarily the most important (e.g., women may report sexual arousal when they are not lubricated or lubrication may occur when women are not aroused; Graham, Sanders, Milhausen, & McBride, 2004). Women may have been more tolerant of the increased lubrication with the VM because they perceived that this would increase their partner's pleasure, similar to women's desire for orgasm not for themselves but to please their male partners (Nicolson & Burr, 2003). It could also be suggestive of the discordance of gendered sexual discourses and power imbalances that exist in

sexual relationships where women are not always enjoying sexual intercourse but are still expected to have it (e.g., Nicolson & Burr, 2003; Phillips, 2000).

The majority of young women had a desire for microbicides having both disease and pregnancy prevention. The saliency of pregnancy (desired and unintended) as well as STI risk for these young women suggest that microbicides may be a suitable alternative for protection.

Reproductive health goals have been shown to be a strong contributor to the likelihood of contraceptive use (Stone & Ingham, 2002). Thus, a nonbarrier disease prevention method may be an attractive alternative. Microbicide promotion will require health care providers to attend to young women's specific context, for example, suggesting appropriate formulations to increase the likelihood of use for STI protection while respectfully acknowledging their reproductive choices.

Due to negative experiences with other, mainly hormonal, methods, many women thought a microbicide with contraceptive properties would be a good alternative. Young women's discussions of the difficulties associated with use of existing methods often included an implicit message that using a microbicide would be easier. The mainly unquestioned belief that microbicides will not have any of the negative side effects associated with hormonal contraception also increased their attractiveness as an alternative method. At the same time, many women worried that the coitus-dependent nature of microbicide use could present difficulties. Specifically, they felt microbicides, like condoms, may disrupt the flow of sexual interactions.

The generally positive assessment of the VM in relation to experiences with hormonal contraceptive use illustrates one of the disadvantages with the evaluation of surrogate or hypothetical products (Elias & Coggins, 2001). That is, it is easy to emphasize the benefits of the product while not experiencing the potential side effects associated with actual use of a microbicide, for example, vaginal itching or burning. Conversely, because the VM had no antimicrobial properties, it is possible that some young women would be willing to tolerate some degree of discomfort and side effects to achieve the goal of disease prevention that will be provided by actual microbicides, especially if the formula also met their reproductive goals.

The use of the microbicide surrogate was accompanied by a noticeable lack of discussion about the genitals. This may be reflective of the general abstraction of sexual behaviors from the body where it is possible to discuss heterosexual intercourse and use of a vaginal moisturizer without directly discussing the vagina. The heterosexual act of intercourse, with the vagina accepting the penis, requires a level of compromise and cooperation. The use of a microbicide within the vagina illustrates how much of that negotiation is defined by the woman's body and highlights the complex contradictions of a "woman-controlled" method. The incorporation of a positive dialogue around women's bodies, in addition to gendered power structures, is essential; it is impossible to separate a woman's experience using a microbicide from her body, as they are intimately intertwined.

The population of women involved in the study may be unique in their willingness to use a VM and respond to questions about their sexual lives, and as such their experiences may not be representative of experiences other women may report. An important strength of the study was the fact that because of the protocol of the larger project, requiring weekly home visits, relationships developed between the first author and the young women interviewed. These relationships did not seem to be affected by the racial differences between the author and some of the participants. The development of a relationship between researchers and participants is noted as a helpful component of qualitative research (Huygens, Kajura, Seely, & Barton, 1996) and likely allowed for a higher level of disclosure about sexuality-related issues, even for more reserved women. In addition, the ways in which young women conceptualized the meaning of the product (i.e., as a lubricant, as a potential prevention method) was and will continue to be a factor in the use of a surrogate microbicide product and a microbicide when it becomes available. The conceptual framework (symbolic interactionism and sexual scripting theory) structuring the interview guide strengthened the study by allowing these issues to be explored with the young women.

The contexts in which these young women negotiated VM use and their sexuality fit into a normative perspective of young people's sexual development (Welsh et al., 2000), which emphasizes the saliency of personal and ecological variables. Addressing the sociocultural contexts and social networks in which sexual behaviors and decisions occur is essential not only in microbicide promotion but also in the promotion of positive sexual development for young women. Therefore, the consideration of these factors allows for a better understanding of young women's sexuality and sexual health. The multiple factors discussed in this study, including the individual, family, and peers, all contributed to young women's decisions about (quite literally) what to put into their vaginas and illustrate the complexity of women's relationships with their bodies.

Despite the limitations of the current study, the findings contribute to our understanding of the individual and contextual factors that may influence acceptability and use of microbicides, including a discussion of sexual pleasure. Further research to elucidate these factors would be beneficial in designing appropriate microbicide formulations as well as targeted educational campaigns and effective instructional materials.

References

1. Alliance for Microbicide Development. (2007). Microbicide candidates in ongoing clinical trials: Summary as of November 2007. Retrieved November 18, 2007, from <http://microbicide.org/microbicideinfo/reference/Microbicides.Ongoing.Clinical.Trials.Summary.02Nov07.pdf>.
2. Blanc , A. K. (2001). The effect of power in sexual relationships on sexual and reproductive health: An examination of the evidence . *Studies in Family Planning* , 32 (3), 189 – 213 .

3. Braunstein , S. & Van de Wijgert , J. (2005). Preferences and practices related to vaginal lubrication: Implications for microbicide acceptability and clinical testing. *Journal of Women's Health* , 14(5), 424–433.
4. Carpenter , L. M. (2002). Gender and the meaning and experience of virginity loss in the contemporary United States . *Gender & Society* , 16 (3), 345 – 365 .
5. Carpenter , L. M. (2005). *Virginity lost: An intimate portrait of first sexual experience* . New York : New York University Press .
6. Centers of Disease Control and Prevention (CDC). (2005). *STD Surveillance (Complete Report)*. Retrieved March 4, 2007, from <http://www.cdc.gov/std/stats/05pdf/2005-tables.pdf>
7. Coggins , C. , Blanchard , K. , Alvarez , F. , Brache , V. , Weisberg , E. , & Kilmarx , P. H. , et al. (2000). Preliminary safety and acceptability of a carrageenan gel for possible use as a vaginal microbicide . *Sexually Transmitted Infections* , 76 , 480 – 483 .
8. Coggins , C. , Elias , C. , Atisook , R. , Bassett , M. T. , Ettiegne-Traore , V. , Ghys , P. D. , Jenkins-Woelk , L. , Thongkrajai , E. , & VanDevanter , N. L. (1998). Women's preferences regarding the formulation of over-the-counter vaginal spermicides . *AIDS* , 12 (11), 1389 – 1403 .
9. Chicoki , M. (2008). *Indiana HIV Resources & Statistics*. Retrieved October 24, 2008, from <http://aids.about.com/od/statebystateresources/qt/indiana.htm>
10. Dworkin , S. L. (2005). Who is epidemiologically fathomable in the HIV/AIDS epidemic? Gender, sexuality, and intersectionality in public health . *Culture, Health & Sexuality* , 7 (6), 615 – 623 .
11. Elias , C. & Coggins , C. (2001). Acceptability research on female controlled barrier methods to prevent heterosexual transmission of HIV: Where have we been? Where are we going? *Journal of Women's Health & Gender-Based Medicine* , 10 (2), 163 – 173 .
12. Elias , C. J. & Heise , L. L. (1994). Challenges for the development of female-controlled vaginal microbicides . *AIDS* , 8 , 1 – 9 .
13. Fine , M. (1988). Sexuality, schooling, and adolescent females: The missing discourse of desire . *Harvard Educational Review* , 58 (1), 29 – 53 .
14. Fine , M. & McClelland , S. (2006). Sexuality education and desire: Still missing after all these years . *Harvard Educational Review* , 76 (3), 297 – 338 .
15. Fortenberry , J. D. (2003). Adolescent sex and rhetoric of risk . In D. Romer (Ed.), *Reducing adolescent risk: Toward an integrated approach* (pp. 293 – 300). Thousand Oaks , CA : Sage .

16. Fortenberry , J. D. , Temkit , M. , Tu , W. , Graham , C. A. , Katz , B. D. , & Orr , D. (2005). Daily mood, partner support, sexual interest, and sexual activity among adolescent women . *Health Psychology* , 24 (3), 252 – 257 .
17. Gagnon , J. H. (1990). The explicit and implicit use of the scripting perspective in sex research . *Annual Review of Sex Research* , 1 , 1 – 43 .
18. Gagnon , J. H. & Simon , W. (1973). *Sexual conduct: The social origins of human sexuality* . Chicago : Aldine .
19. Global Campaign for Microbicides. (2007). Microbicide research & development: What's in the pipeline? Retrieved November 18, 2007, from [http://www.global-campaign.org/clientfiles/FS3-Pipeline\[E\]07.pdf](http://www.global-campaign.org/clientfiles/FS3-Pipeline[E]07.pdf)
20. Graham , C. A. , Sanders , S. A. , Milhausen , R. R. , & McBride , K. R. (2004). Turning on and turning off: A focus group study of the factors that affect women's sexual arousal . *Archives of Sexual Behavior* , 33 (6), 527 – 538 .
21. Harrison , P. , Rosenberg , Z. , & Bowcut , J. (2003). Topical microbicides for disease prevention: Status and challenges . *Clinical Infectious Diseases* , 36 , 1290 – 1294 .
22. Harvey , S. M. , Bird , S. T. , Galavotti , C. , Duncan , E. A. , & Greenberg , D. (2002). Relationship power, sexual decision making and condom use among women at risk for HIV/STDS . *Women's Health* , 36 (4), 69 – 84 .
23. Huygens , P. , Kajura , E. , Seely , J. , & Barton , T. (1996). Rethinking methods for the study of sexual behaviour . *Social Science & Medicine* , 42 , 221 – 231 .
24. Laumann , E. O. , Gagnon , J. H. , Michael , R. T. , & Michaels , S. (1994). Intrapyschic and interpersonal scripts . In *The Social Organization of Sexuality* . Chicago , IL : University of Chicago Press .
25. Longmore , M. (1998). Symbolic interactionism and the study of sexuality . *The Journal of Sex Research* , 35 (1), 44 – 57 .
26. Muhr , R. (2004). *Atlas ti. Scientific Software Development GmbH*, Berlin.
27. Nicolson , P. & Burr , J. (2003). What is “normal” about women's (hetero)sexual desire and orgasm?: A report of an-depth interview study . *Social Science & Medicine* , 57 , 1735 – 1745 .
28. Orbuch , T. L. & Fine , M. A. (2003). The context of race/ethnicity in interpersonal relationships: Crossing the chasm . *Journal of Social and Personal Relationships* , 20 (2), 147 – 152 .

29. O'Sullivan , L. F. & Meyer-Bahlburg , H. F. L. (2003). African-American and Latina inner-city girls' reports of romantic and sexual development . *Journal of Social and Personal Relationships* , 20 (2), 221 – 238 .
30. Phillips , L. (2000). *Flirting with danger: Young women's reflections on sexuality and domination* . New York : New York University Press .
31. Philpott , A. , Knerr , W. , & Maher , D. (2006). Promoting protection and pleasure: Amplifying the effectiveness of barriers against sexually transmitted infections and pregnancy . *Lancet* , 368 , 2028 – 2031 .
32. Plummer , K. (2003). Queers, bodies and the postmodern sexualities: A note on revisiting the “sexual” in symbolic interactionism . *Qualitative Sociology* , 26 (4), 515 – 530 .
33. Potts , M. (1994). The urgent need for a vaginal microbicide in the prevention of HIV transmission (Editorial) . *American Journal of Public Health* , 84 (6), 890 – 891 .
34. Pulerwitz , J. , Amaro , H. , De Jong , W. , Gortmaker , S. L. , & Rudd , R. (2002). Relationship power, condom use and HIV risk among women in the USA . *AIDS Care* , 14 (6), 789 – 800 .
35. Raymonda , E. G. , Chen , P. L. , Condon , S. , Luoto , J. , Barnhart , K. T. , Creinin , M. D. , et al. (2005). Acceptability of five nonoxynol-9 spermicides . *Contraception* , 71 (6), 438 – 442 .
36. Short , M. B. , Mills , L. , Majkowski , J. M. , Stanberry , L. R. , & Rosenthal , S. L. (2003). Topical microbicide use by adolescent girls: Concerns about timing, efficacy, and safety . *Sexually Transmitted Diseases* , 30 (11), 854 – 858 .
37. Short , M. B. , Mills , L. , Majkowski , J. M. , Stanberry , L. R. , & Rosenthal , S. L. (2004). Adolescent issues associated with knowledge of and access to topical microbicides . *Journal of Women's Health* , 13 (10), 1127 – 1135 .
38. SPSS Inc. (2006). *SPSS Software* . Chicago , IL : SPSS Inc .
39. Stein , Z. (1990). HIV prevention: The need for methods women can use . *American Journal of Public Health* , 80 (4), 460 – 462 .
40. Stone , N. & Ingham , R. (2002). Factors affecting British teenagers' contraceptive use at first intercourse: The importance of partner communication . *Perspectives on Sexual and Reproductive Health* , 34 (4), 191 – 197 .
41. Tolman , D. (2006). In a different position: Conceptualizing female adolescent sexuality development within compulsory heterosexuality . *Directions for Child and Adolescent Development* , 112 , 71 – 89 .

42. Venture , S. J. , Matthews , T. J. , & Hamilton , B. E. (2002). Teenage births in the United States: State trends, 1991–2000, an update. National Vital Statistics Reports, 50(9). Hyattsville, MD: National Center for Health Statistics.
43. Weiss , R. S. (1994). Learning from strangers: The art and method of qualitative interview studies . New York : The Free Press .
44. Welsh , D. P. , Rostosky , S. S. , & Kawaguchi , M. C. (2000). A normative perspective of adolescent girls' developing sexuality . In C. B. Travis & J. W. White (Eds.), Sexuality, society, and feminism (pp. 111–140). Washington , DC : American Psychological Association .
45. Wulf , D. , Frost , J. , & Darroch , J. (1999). Microbicides: A new defense against sexually transmitted diseases . New York : [Report] Alan Guttmacher Institute .
46. Zubowicz , E. A. , Oakes , J. K. , Short , M. B. , Perfect , M. M. , Succop , P. S. , & Rosenthal , S. L. (2006). Adolescents' descriptions of the physical characteristics of microbicide surrogates and experiences of use . Journal of Women's Health , 15 (8), 952 – 961 .