Sexual Barrier Acceptability Among Multiethnic HIV-Positive and At-Risk Women

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Abstract

Background: Sexual behavior interventions have been found to reduce sexual risk among HIV-seropositive and high-risk HIV-seronegative women.

Methods: This study examined the influence of ethnicity and HIV serostatus on sexual barrier acceptability and use at short-term and long-term follow-up among African American and Hispanic ($n = 457$) women participating in a gender and culturally tailored sexual risk reduction intervention. We hypothesized that sexual barrier acceptability and use would differ between ethnic groups but that this difference would dissipate after intervention participation. We further postulated that HIV-seropositive women would report greater acceptability and use of sexual barriers than seronegative women at baseline and that after participation in the intervention, acceptability and use would increase for both serostatus groups.

Results: We enrolled 317 African American and 140 Hispanic women, 273 (60%) seropositive and 184 (40%) seronegative. Ethnic differences in the frequency of male and female condom use existed at baseline but were not found at 12-month follow-up. Male condom acceptability was higher among African American women than Hispanic women at baseline and 12-month follow-up. Seropositive women reported higher levels of consistent male condom use, but both ethnic and serostatus groups reported high levels (positive, 40%; negative, 52%) of inconsistent condom use. Most women had little experience with female condoms or lubricating gels and suppositories at baseline. No differences between ethnicities were identified in lubricant use.

Conclusions: Results support the use of a culturally tailored intervention among these populations to increase sexual barrier use and reduce sexual risk.

Introduction

WOMEN HAVE SUSTAINED the largest increases in rates of new HIV infections of all at-risk populations. Heterosexual transmission remains the principal source of HIV infection among women in the United States, accounting for 80% of newly diagnosed HIV/AIDS cases in 2005.¹ Minority women, representing 24% of the female population, are disproportionately represented among HIV and AIDS cases; 83% of HIV-positive women are members of a minority group.¹ The majority of HIV-seropositive women in the United States who were infected by heterosexual contact are African American and Hispanic.²

Reduction of risky sexual behaviors is a primary target of HIV prevention efforts. Typically, after a seropositive diagnosis or intervention, condom use increases but is not sustained after 6 months.^{3,4} Additionally, in serodiscordant couples, the seropositive member may not protect the unin-

fectured partner after diagnosis.⁵ Limited condom use highlights the need for alternate methods of disease protection, such as microbicides. However, acceptability of such products will undoubtedly influence whether they are consistently used by the target population.

Reviews of HIV interventions^{6,7} recommend interventions that address sexual "education,"^{8,9} sexual barrier acceptability,¹⁰ reproductive desires, and sexual negotiation skills.^{11,12} Safer sex interventions with a range of sexual barriers^{13–15} enable men and women to make choices based on acceptability. As considerable choice exists in sexual barrier products, several studies have investigated whether product preference affects acceptability or use. Minnis et al.¹⁶ found that dissatisfaction with a particular barrier method was associated with less use; however, being satisfied with one's product did not increase its likelihood of use. Macaluso⁶ found the majority of women and their partners disliked female and male condoms. Madrigal et al.¹⁷ found female sex

workers preferred the female condom over the male condom. However, Jones et al.¹⁰ found that HIV-positive and HIV-negative women who participated in a sexual risk reduction group intervention increased their use of male and female condoms and had higher acceptability than did those in an individual intervention condition. Therefore, current literature suggests that although individual preferences vary, sexual barrier use can be increased through targeted interventions.^{3-6,8-11,13-21}

To help combat the rising incidence of HIV infection among racial/ethnic minority women, this research team developed a culturally tailored sexual risk reduction intervention that involved messages and materials that directly addressed the cultural values of the study population.²² Because sexual risk behavior may vary by HIV serostatus, the intervention included both HIV-positive and HIV-negative women.

The purpose of the present study was, therefore, to test whether sexual barrier acceptability and use differed by ethnicity (Hispanic vs. African American) or HIV serostatus over time after completion of the sexual risk reduction intervention at short-term (i.e., 6-months postbaseline) and long-term (i.e., 12-months postbaseline). We hypothesized that sexual barrier acceptability and use would differ between African American and Hispanic women but that this difference would dissipate after participation in the intervention. We further postulated that HIV-seropositive women would report greater acceptability and use of sexual barriers than seronegative women at baseline and that after participation in the intervention, acceptability and use would increase for both seronegative and seropositive women.

Materials and Methods

Participants and recruitment

University of Miami Miller School of Medicine (UMMSM) Institutional Review Board (IRB) approval was obtained before study initiation. Study candidates were recruited from clinic sites at the UMMSM/Jackson Memorial Hospital and outlying community health clinics. Participants ($n = 457$) were ≥ 18 years of age, sexually active with at least one male partner over the past 30 days, HIV-seropositive and seronegative high-risk women living in South Florida. High risk was defined as having a bisexual, injection drug using (IDU), or sexually transmitted disease (STD)/HIV-positive sexual partner, having had unprotected vaginal or anal sex with multiple sex partners within the previous 12 months, or having a previous or current STD diagnosis. (Because of potential distress after an HIV diagnosis, newly diagnosed study candidates, that is, those testing HIV-seropositive within the previous 2 weeks, had their enrollment postponed for 2 weeks.)

Potential study participants were recruited primarily from STD/HIV clinics or word of mouth from program participants/graduates. Of those women approached at clinics, 33% agreed to be screened for eligibility. Study ineligibility was primarily due to lack of sexual activity within the past 30 days. Candidates were provided informed consent and were administered a baseline assessment by a study assessor. Recruiters, assessors, and interventionists were female and bilingual (English, Spanish), and all interviews and assessments were conducted in the preferred language of the participant. Intervention sessions were conducted exclusively in English

or Spanish, and regional differences in Spanish translations were clarified as they emerged throughout the sessions.

Participants were randomized to one of two intervention arms—group or individual—and participated in three monthly 2-hour sessions. As participants enrolled, they were given a study identification number and added to the next available cohort list, each with 20 allotted spaces. Once 20 participant identification numbers had been added to the cohort list, the identification numbers were randomly selected and added to a list with sequential condition spaces (e.g., space 1, group condition assignment; space 2, individual condition assignment; space 3, group condition assignment) until the 20 possible condition assignments were filled.

The purpose of using group and individual intervention conditions was to permit comparison of effects of variations in the type and intensity of interventions. The group intervention condition involved cognitive behavioral skill training and experiential interaction with product distribution, whereas the individual intervention condition focused on enhanced usual care with standard guidance on safer sex and product distribution.

Assessors were blind to study arm assignments. Because of ethical concerns related to the transmission of HIV, a no treatment, attention-control condition was not included in the study. All participants were assessed over a 12-month period (baseline, sessions one, two, and three, and 6 months and 12 months postbaseline) and received monetary compensation for their time and travel expenses (\$40 per assessment visit, \$20 per session visit). Participants were screened for STDs and vaginal infections at enrollment via urine sample for gonorrhea and *Chlamydia* infection, blood sample for syphilis, blood sample for HIV (if unknown status), and a gynecological examination. Women were notified of their STD results and referred for appropriate no-cost treatment before being enrolled in the study. At baseline, 27 (15%) HIV-negative and 33 (12%) HIV-positive women had an STD diagnosis.

Intervention format and content

Study participants were randomly assigned to a group or individual intervention condition (Fig. 1). The two conditions were identical presentations of the same intervention in a group or individual format. There were no group by time differences noted between the two intervention conditions (i.e., they were equivalent in their effect). Therefore, the data from the two conditions were combined for the purposes of addressing the impact of serostatus and ethnicity on changes in sexual risk reduction, that is, sexual barrier use. Study data were drawn from a larger project conducted at the University of Miami addressing sexual risk behavior.²³

The intervention was manualized and culturally adapted with feedback from previous pilot projects and focus groups with English, Spanish, and Haitian women.^{10,24} A cultural brokerage team was established to address cultural factors and to adapt the content of the program to the unique characteristics of the ethnic minority groups in the study population. Spanish language project materials were subjected to a rigorous translation and back-translation process to create a linguistically appropriate intervention program for Hispanic women. The cultural brokerage process considered how the translation reflected the cultural values of the target populations to ensure culturally as well as linguistically equivalent

FIG. 1. Flow diagram of the progress through the phases of a randomized trial.

meaning of questionnaire items, particularly as related to attitudes and beliefs about illness, misconceptions about HIV, and level of acculturation. It was theorized that offering the intervention in culturally, as well as linguistically, accurate English and Spanish would improve the likelihood that minority women from both ethnic groups (i.e., African American and Hispanic) could receive significant benefits from the program.

Facilitators were mental health counselors and psychologists trained in leading the intervention. Groups, limited to 10 women, employed a closed, structured behavioral change intervention. Each of the three monthly 2-hour sessions emphasized participation and experimentation with sexual barrier products and provided an opportunity for practice, feedback, and reinforcement of sexual risk reduction strategies. Special consideration was given to group cohesion and skill building in a supportive environment through the use of role playing and real life examples designed to involve participants with each other as well as provide insight into problem solving strategies.

Intervention material was presented using the conceptual model of the theories of reasoned action and planned behavior,²⁵ which postulates that intentions influence attitudes and subjective norms, which influence beliefs about behavior.²⁶ The theory of planned behavior proposes that perceived behavioral control influences intentions and behavior.²⁷ Within this model, it is hypothesized that sexual behavioral intentions and HIV-related knowledge influence attitudes and perceived norms regarding barrier use and maladaptive

coping strategies. Perceived sexual self-efficacy, control of sexual behavior, and barrier use will influence risk reduction strategies and future sexual behavior.

Videos illustrated the correct methods of barrier use, discussed commonly asked questions, and presented sexual negotiation scenarios. Participants practiced the correct techniques for using male and female condoms, using models, and were provided with a 1-month supply of male and female condoms after sessions 1, 2, and 3 and with a 1-month supply of vaginal lubricants (gels and suppositories, surrogates for vaginal microbicides to assess acceptability) after sessions 2 and 3. Participants were encouraged to return during the follow-up period for additional supplies as needed throughout the 12-month period of their participation.

Intervention content included, but was not limited to, an introduction to HIV and STDs, reproductive choice, male and female condom use, hierarchical counseling, family planning, vaginal lubricants, and sexual negotiation strategies. Hierarchical counseling, adapted from the New York hierarchy,²⁸ focused on providing information on current methods for HIV/STD prevention according to their efficacy. Beginning with abstinence, sexual barrier methods were presented in a descending order of efficacy. For example, male condoms were seen as the most efficacious barrier method, followed by female condoms and cervical caps. This form of counseling involves open-ended discussions in straightforward and simple language on HIV transmission, condom use, and other options.²⁹ Various forms of vaginal lubricants as microbicide surrogates were included to assess ethnic group acceptability

of such products. Participants were actively involved in applying cognitive behavioral skills to adherence of sexual barrier use, the use of role playing techniques to increase sexual negotiation about condom and lubricant use, and experiential training with male and female condoms, as well as vaginal lubricants.

Measures

Assessment measures were administered at baseline and at 6 and 12 months postbaseline. The assessments were administered during a one-on-one interview and, on average, were 45–60 minutes in duration. Assessment instruments administered included a demographic questionnaire, Brief COPE-revised;³⁰ HIV self-efficacy scale; sexual activities questionnaire; sexual barrier questionnaire; alcohol, drug use, and needle use questionnaire; gynecological questionnaire; and a sexual diary. The following instruments were used in the analyses for this article.

Demographic questionnaire. This questionnaire included data collection on age, religion, nationality, ethnicity, educational level, employment status, residential status, HIV status, current or previous drug and alcohol use, marital status/current partner status, living situation, number of children, and children's serostatus (if known).

Sexual activities questionnaire. This 55-item scale was adapted from the Sexual Risk Behavior Assessment Schedule (SERBAS).³¹ Responses indicated the frequency of heterosexual sexual intercourse (vaginal, oral, anal) in the past 30 days with primary (most frequent sexual relations) and non-primary (any other male partners) partners, sexual barrier use, HIV status of the partner(s), known sexual practices of the partner, and alcohol or drug use before initiation of sexual activity on a scale of 5, all the time, to 1, none of the time. The SERBAS was used to assess consistency of male and female condom use.

Barrier Preference Measure (BPM). This 6-item measure was developed using feedback from participants during pilot testing and assesses most preferred product and reasons for nonuse of products. The BPM's scale scores are derived as categorical variables and were used to assess previous product use, product ratings, perceived partner product preference, and participant's product preference (i.e., male condoms—black, neutral, multicolored; female condom; gel; suppository). Data on the psychometric properties of this questionnaire are not available.

Statistical analyses

This study conducted repeated chi-square analyses using McNemar statistics with an alpha (2-tailed) of 0.05. Correlations are reported as Pearson's *r* statistics; between-group outcome measures were tested using *F* tests. The following analyses addressed differences between ethnic subgroups. There were no differences between conditions at baseline and follow-up; both groups showed improvement in condom use and risk reduction over time. Therefore, the two intervention arms were collapsed to enable us to examine ethnic subgroup differences over time. Primary outcomes were condom use and acceptability; the secondary outcome was male condom

color preference by ethnicity. Analysis was conducted controlling for relevant confounders, that is, time since diagnosis, STD history, and condition assignment. Analysis for outcomes was based on data from primary partners.

Results

Participant characteristics

Sample participants (*n* = 457) were African American (*n* = 317, 69%) and Hispanic (*n* = 140, 31%); 273 (60%) were seropositive and 184 (40%) were seronegative. The ethnic makeup by HIV status included 204 (64%) HIV-seropositive African American and 69 (49%) HIV-seropositive Hispanic women. Demographic characteristics by race/ethnicity are presented in Table 1. Education and income status were not correlated with sexual barrier use at baseline. Of the entire sample, only 37 women (8%) endorsed having secondary sexual partners during the past month.

Baseline. Of a subsample of 414 women (43 missing), most women (*n* = 285, 69%) had been sexually active with a male partner in the previous month. Half of the seronegative women (52%) and many of those who were seropositive (40%) were inconsistent condom users. Condom use in previous month by ethnicity, serostatus, and time point are presented in Table 2. Condom use among those currently sexually active (sexually active within the last 30 days) was primarily either

TABLE 1. DEMOGRAPHICS CHARACTERISTICS OF PARTICIPANTS

Characteristic	African American Women (<i>n</i> = 317)	Hispanic Women (<i>n</i> = 140)
HIV-seropositive status	204 (64%)	69 (49%)
Region of origin		
United States	314 (99%)	34 (24%)
Caribbean	3 (1%)	45 (32%)
Central America	—	27 (19%)
South America	—	32 (30%)
Other	—	2 (1%)
Mean age	39 (9.46)	42 (12.32)
Years of education		
1–6	—	18 (13%)
7–9	49 (12%)	28 (19%)
10–12	231 (74%)	57 (33%)
Some college/university	44 (9%)	32 (28%)
Children	261 (82%)	119 (85%)
Actively trying to have children	17 (5%)	2 (1%)
Marital status		
Single	215 (68%)	54 (39%)
Married	30 (10%)	37 (26%)
Employment status		
Full-time	19 (6%)	14 (10%)
Part-time	34 (11%)	25 (18%)
Unemployed	224 (71%)	88 (63%)
Attending religious services	155 (49%)	77 (55%)
Drug and alcohol history	74 (23%)	10 (7%)

Values are given as raw *n* (%) for categorical data and means (standard deviations) for continuous data

TABLE 2. CONDOM USE IN PREVIOUS MONTH, BY ETHNICITY, SEROSTATUS, AND TIME POINT

		<i>Ethnicity, serostatus, and time point</i>											
		<i>Baseline</i>				<i>6-month follow-up</i>				<i>12-month follow-up</i>			
<i>Product use 1 month prior</i>		AA–	AA+	Hisp–	Hisp+	AA–	AA+	Hisp–	Hisp+	AA–	AA+	Hisp–	Hisp+
100% condom use	No sex	29%	28%	37%	39%	34%	34%	34%	39%	39%	41%	27%	35%
	Sex	71%	72%	63%	61%	66%	66%	66%	61%	61%	59%	73%	65%
	Male condom	48%	61%	45%	60%	49%	59%	71%	74%	71%	63%	54%	71%
	Female condom	3%	8%	0%	3%	10%	5%	5%	0%	5%	2%	4%	6%
Inconsistent condom use	Male condom	18%	22%	30%	16%	31%	27%	19%	22%	17%	29%	42%	11%
	Female condom	2%	11%	5%	8%	25%	23%	14%	17%	10%	17%	24%	15%
No condom use	Male condom	34%	17%	25%	24%	20%	14%	10%	4%	12%	8%	4%	18%
	Female condom	95%	81%	95%	89%	65%	72%	81%	83%	85%	81%	72%	79%

AA–, HIV-negative African American woman; AA+, HIV-positive African American woman; Hisp–, HIV-negative Hispanic woman; Hisp+, HIV-positive Hispanic woman.

consistent or no use (Table 2). Seropositive women reported using male condoms more consistently (60%) than seronegative women (48%), with seronegative women endorsing no use (32%) and inconsistent use (52%) more than seropositive women (19% and 40%, respectively, chi-square = 3.723, $p = 0.037$). Seronegative women used protection with any product significantly less than did seropositive women (chi-square = 24.226, $p < 0.001$). In order to assess STD history as a potential confounder to acceptability outcomes, we separated groups by HIV serostatus to assess STD diagnosis and risk behavior (i.e., condom use). Those who were HIV negative with an STD diagnosis were not more likely to use protection at baseline ($F = 0.001$, $p = 0.973$); however, those who were HIV positive with an STD diagnosis were more likely to use protection ($F = 4.364$, $p = 0.043$). STD history was controlled for in the following analyses.

Previous product use differed between African Americans and Hispanics. Hispanics showed less frequent use of male condoms (chi-square = 20.31, $p < 0.001$) and less frequent use of female condoms (chi-square = 6.597, $p = 0.037$) than African Americans (Table 3). Seronegative Hispanic women had significantly less experience using male and female condoms than seropositive Hispanic women at baseline ($F = 5.32$, $p = 0.023$), with no significant differences in previous or current use of lubricant products. Few participants in either ethnic group reported previous use of vaginal lubricants. Participant acceptability ratings of male condom use were higher among African Americans (chi-square = 27.24, $p < 0.001$), whereas ratings of other products did not differ between the cultural/ethnic groups (female condoms, chi-square = 6.24, $p = 0.283$; gels, chi-square = 5.93, $p = 0.313$; suppositories, chi-square = 2.79, $p = 0.733$); (Table 3).

Postintervention. Since a group $\times$ time effect was not detected, we combined intervention arms for the remaining analyses. The analyses performed controlled for any differences in preference or condom use identified at baseline. Preferences within product types (male colored condom and lubricant types) differed, with African American HIV-seronegative women being more likely to prefer multicolored condoms than African American HIV-seropositive women (chi-square = 4.89, $p = 0.022$). Also, African American seropositive women were more likely to prefer black condoms than African American seronegative women (chi-square

7.016, $p = 0.005$. Hispanic HIV-seronegative women were more likely to prefer multicolored condoms (chi-square 15.15, $p < 0.001$) than Hispanic seropositive women. There were no differences between ethnic group or serostatus in preference for neutral colored condoms (chi-square = 0.532, $p = 0.295$). Condom use in previous month by ethnicity, serostatus, and time point is shown in Table 2.

TABLE 3. BASELINE PRODUCT EXPERIENCE AND RATINGS, BY ETHNICITY

	<i>African American women</i>	<i>Hispanic women</i>
Product use at baseline		
Male condoms	305 (96%)**	118 (84%)
Female condoms	113 (36%)*	33 (24%)
Gels	193 (30%)	41 (29%)
Suppositories	39 (12%)	23 (16%)
Spermicidal products (any type)	112 (43%)*	39 (35%)
Ratings of products		
Male condoms		
Liked	220 (69%)**	55 (40%)
Neutral	53 (17%)**	32 (23%)
Disliked	31 (10%)**	31 (22%)
Never used	12 (4%)**	22 (16%)
Female condoms		
Liked	67 (21%)*	19 (13%)
Neutral	18 (6%)	8 (6%)
Disliked	27 (8%)*	6 (4%)
Never used	203 (64%)*	107 (76%)
Gels		
Liked	59 (19%)	27 (19%)
Neutral	15 (5%)	8 (6%)
Disliked	19 (6%)	9 (4%)
Never used	221 (70%)	99 (71%)
Suppositories		
Liked	19 (6%)	12 (8%)
Neutral	8 (3%)	6 (4%)
Disliked	12 (4%)	5 (4%)
Never used	275 (87%)	118 (83%)

Values are for raw n (%) for categorical data and means (standard deviations) for continuous variables.

*Significant at $p < 0.05$; **significant at $p < 0.001$.

TABLE 4. BASELINE AND 6 AND 12 MONTHS POSTBASELINE: CURRENT PRODUCT USE BY ETHNICITY

Current product use and serostatus	Ethnicity and time point					
	Baseline		6 months		12 months	
	African American	Hispanic	African American	Hispanic	African American	Hispanic
Male condom current use	(n = 178)	(n = 34)	(n = 115)	(n = 41)	(n = 116)	(n = 51)
HIV negative	64 (66%)	15 (75%)	41 (80%)	19 (90%)	36 (88%)	23 (96%)
HIV positive	114 (83%)	19 (40%)	74 (86%)	22 (96%)	80 (92%)	28 (82%)
Female condom current use	(n = 27)	(n = 52)	(n = 42)	(n = 8)	(n = 23)	(n = 14)
HIV negative	3 (6%)	19 (95%)	18 (35%)	4 (19%)	6 (69%)	7 (29%)
HIV positive	24 (19%)	33 (89%)	24 (28%)	4 (17%)	17 (20%)	7 (20%)
Gel or suppository use	(n = 8)	(n = 3)	(n = 16)	(n = 5)	(n = 12)	(n = 5)
HIV negative	2 (3%)	3 (5%)	8 (16%)	3 (14%)	4 (10%)	3 (12%)
HIV positive	6 (5%)	0 (0%)	8 (9%)	2 (9%)	8 (10%)	2 (6%)

African American seronegative women were more likely than African American seropositive women to prefer gels (chi-square = 23.738, $p = 0.046$) (gel, chi-square = 2.36, $p = 0.082$; suppository, chi-square = 0.044, $p = 0.486$). No significant differences in lubricant product type were identified within Hispanic serostatus groups. African American women were more likely than Hispanic women to report that their partners refused to use any type of sexual barrier product or lubricant (chi-square = 6.366, $p = 0.007$). Both ethnic groups most frequently endorsed failure to use products as being due to partners' refusing to discuss a request for product use (chi-square = 3.736, $p = 0.046$).

Six months postbaseline. At 6 months postbaseline follow-up, among all participants in both ethnic groups, inconsistent condom users ($n = 100$) significantly increased condom use and acceptability ratings (female condoms, chi-square 6.597, $p = 0.037$; male condoms, chi-square = 20.314, $p < 0.001$). Condom use in previous month by ethnicity, serostatus, and time point are shown in Table 2. Participant ratings of male condoms remained higher among African Americans (chi-square = 27.24, $p < 0.001$) than Hispanics, whereas ratings of other products remained similar (female condoms, chi-square = 6.24, $p = 0.283$; gels, chi-square = 7.35,

$p = 0.196$; suppositories, chi-square = 4.23, $p = 0.517$) for both ethnic groups. Among HIV-seronegative Hispanics, male condom use was significantly lower than among African Americans (chi-square = 4.54, $p = 0.034$). The greatest increases in condom use were among seronegative female condom users in both Hispanic and African American women (chi-square = 6.24, $p < 0.001$).

12 months postbaseline. At 12 months postbaseline, male and female condom use retained the initial increases (Table 4). Participant acceptability ratings of male condoms remained higher among African Americans (chi-square 22.758, $p < 0.001$) than Hispanics, and ratings of female condoms improved among Hispanic women (chi-square 11.538, $p = 0.042$). Acceptability of lubricants and the use of lubricant products did not differ between ethnicities (gels, chi-square = 2.68, $p = 0.749$; suppositories, chi-square = 4.23, $p = 0.518$) at 12 months (Table 5).

Discussion

This study of HIV-seropositive and seronegative African American and Hispanic women examined whether ethnicity and serostatus influenced use and acceptance of sexual barrier

TABLE 5. BASELINE AND 6 AND 12 MONTHS POSTBASELINE: PRODUCT EXPERIENCE BY ETHNICITY

Product experience and serostatus	Ethnicity and time point					
	Baseline		6 months		12 months	
	African American	Hispanic	African American	Hispanic	African American	Hispanic
Male condom experience	(n = 317)	(n = 140)	(n = 237)	(n = 81)	(n = 254)	(n = 102)
HIV negative	107 (96%)	55 (78%)	89 (98%)	39 (85%)	88 (97%)	44 (85%)
HIV positive	197 (97%)	63 (91%)	148 (100%)	42 (91%)	166 (99%)	58 (97%)
Female condom experience	(n = 138)	(n = 33)	(n = 168)	(n = 52)	(n = 192)	(n = 70)
HIV negative	84 (75%)	15 (21%)	61 (66%)	27 (59%)	63 (56%)	31 (71%)
HIV positive	54 (27%)	18 (26%)	107 (72%)	25 (54%)	129 (77%)	39 (65%)
Gel experience	(n = 93)	(n = 41)	(n = 169)	(n = 59)	(n = 187)	(n = 76)
HIV negative	39 (35%)	19 (27%)	64 (70%)	31 (67%)	72 (79%)	37 (71%)
HIV positive	54 (27%)	22 (32%)	105 (71%)	28 (61%)	115 (70%)	39 (65%)
Suppository experience	(n = 39)	(n = 28)	(n = 141)	(n = 57)	(n = 39)	(n = 23)
HIV negative	15 (13%)	12 (17%)	54 (59%)	31 (67%)	15 (13%)	12 (17%)
HIV positive	24 (12%)	16 (11%)	87 (59%)	26 (57%)	24 (12%)	11 (16%)

products after a sexual risk reduction intervention. We found ethnic differences in male and female condom use at baseline, but these differences were no longer evident at the 12-month follow-up. Male condom acceptability was higher among African American women than Hispanic women at baseline and at 12 month follow-up. Seropositive women reported higher levels of consistent male condom use, but both ethnic and serostatus groups reported high levels of inconsistent condom use. No differences between ethnicities were identified in lubricant use. The observed levels of sexual barrier use and acceptability are similar to those found in previous studies.^{23,32}

The improvement in inconsistent condom use may have been due partly to the emphasis placed on gender-specific intervention content that addressed gender dynamics and social support. The frequency of inconsistent male and female condom use and noncondom use was high at baseline for seronegative African American and Hispanic women. Male and female condom use and acceptability among inconsistent condom users increased in both ethnic groups at 6 and 12 months follow-up. African American and Hispanic women in both conditions increased male condom use, adding to the literature on the efficacy of behavioral interventions to increase male condom use.

There are cost implications associated with finding similar levels of effectiveness of the group and individual intervention arms, suggesting support for the use of the more cost-effective approach, the group intervention. Previous experience with male condoms was lowest among Hispanic seronegative women. Consistent with previous studies of multiethnic HIV-positive and HIV-negative women,^{10,23} seropositive women were more likely to use sexual barrier protection. Interestingly, the greatest gains among seronegative participants in both ethnic groups were in female condom use. This suggests that recent efforts to increase access to female condoms by marketing less expensive products may be especially relevant to those not currently using male condoms.

There was a consistent cultural difference in the acceptability of male condoms, with African American women reporting greater acceptance of male condoms than Hispanic women. Although attitudes about male condoms improved in both ethnic groups, African Americans maintained the most positive perceptions at 12 months follow up. This suggests that ethnicity should be considered in sexual product development, as various cultural groups may have differing preferences. Differences in preferences for sexual barriers at 6 months postbaseline were also found within ethnic groups between seropositive and seronegative high-risk women.

Overall product acceptability and use regarding lubricant products did not differ between ethnicities or serostatus groups, although both ethnicities preferred the gel product to the suppository. Differences between serostatus groups among African American women about male condoms were evident, as African American seronegative women were more likely to prefer multicolored male condoms, and HIV-seropositive African American women were more likely to prefer black condoms. Notable differences in condom color preferences were observed by serostatus among Hispanic women. Hispanic seronegative women preferred multicolored condoms more than did Hispanic seropositive women.

Our results suggest that condom color may be a factor in acceptability. Seropositive women's preference for black condoms might have been due to the perceived durability of the condom because of its darker color and less transparency than the neutral or colored condoms. The color preference by serostatus among Hispanic women, with Hispanic seronegative women preferring multicolored condoms more than Hispanic seropositive women, was unexpected; the festive characteristic of the multicolored condoms may add to the novelty of its use, whereas seropositive women may perceive these condoms as less durable than traditional condoms. Interestingly, no ethnic or serostatus group preferred neutral tone condoms, the most widely distributed condom type in the world. That acceptability of neutral colored condoms showed no ethnic differences supports the validity of the converse findings about color preferences and ethnicity, suggesting that such factors should be considered in developing condom promotion strategies targeting specific ethnic or serostatus groups.

At baseline, Hispanic women had less experience with male condoms and rated condoms less favorably than did their African American counterparts. Attitudes about female condoms improved among Hispanic women over time. More Hispanic women had never used a male or female condom compared to African American women. These findings suggest that intervention programs that provide Hispanic women with opportunities to become familiar with male and female condoms through experiential training can be effective in changing their perceptions and willingness to use these products. The greatest gains in male condom use among Hispanic women were in the 6 months postbaseline. At 12-month follow-up, both ethnicities had comparable product use, indicating that Hispanic women's rates of male and female condom use caught up with that of African American women. Similarly, African American women had the greatest gains in female condom use at 6 months postbaseline, with both ethnicities having comparable gains at long-term follow-up. These increases in product use at 6 months may reflect the rapid increase in condom use after testing and intervention found in previous studies.^{3,4} In this study, however, product use was also maintained at higher levels at 12-month follow-up. The maintenance of behavioral change in male and female condom use among African American and Hispanic women provides evidence that increases in condom use after a risk reduction intervention among women from both ethnic groups can be maintained at 6-month and 12-month follow-up.

Not surprisingly, sexual partner responses to product introduction appear to influence product use. Among African American women, having a partner refuse to use products was more frequently endorsed than among Hispanic women. However, there were no differences between ethnicities about partners refusing to discuss sexual barrier product use. Results suggest that involving men in sexual barrier use interventions and enhancing sexual communication among and within these multicultural populations may reduce resistance to trying unfamiliar sexual barrier products.

The present study has certain limitations that should be noted. Generalizability of results to subpopulations within ethnic groups is limited, primarily because of restriction of the sample to high-risk groups. The Hispanic sample size also precluded analyses by subethnic groups (i.e., Cubans, Central

American, South American, and Puerto Rican), which might illuminate additional subcultural issues to be considered in designing more efficacious culturally relevant interventions.¹⁰ Also, because participants were of lower socioeconomic status, they may have differed from women in other socioeconomic groups with regard to condom attitudes and practices. The absence of a control group limits the interpretability of the intervention findings. The study's reliance on self-reporting makes data obtained subject to biases of memory and social desirability that must be considered.

Despite these limitations, the current study contributes to our understanding of ethnic and serostatus differences in the use and acceptability of sexual barrier products among African American and Hispanic women. Results suggest that condom use and product acceptability can be improved among these two minority groups. Additionally, as all the women endorsed engaging in high-risk sexual behavior, they may benefit most from the eventual introduction of sexual barriers in the form of microbicides. The relative acceptability of lubricant products by ethnic group should be considered in product development.

Regardless of ethnicity, serostatus, product acceptability, and intervention condition, sexual risk remains a critical issue for these minority women. The majority of African American and Hispanic women find it difficult to convince their partners to use condoms, providing support for combining strategies to improve women's sexual negotiation skills and inclusion of male partners in future educational and behavioral interventions that address condom and lubricant product preference and acceptability. HIV prevention interventions have primarily focused on the individual rather than "the couple as a unit of change and analysis, neglecting the role played by partners."²⁰ Research efforts that address barriers to condom use among minority women remain beneficial to the woman and ultimately affect her partner(s), family, and community as a whole.

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