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Condoms are More Effective When Applied by Males: A Study of Young Black Males in the United States

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Abstract

Purpose—To determine, among a sample of young black men (YBM), whether female application of male condoms for penile-vaginal intercourse would be associated with higher or lower rates of breakage/slippage. A secondary aim was to investigate if higher rates of breakage/slippage were associated with increased odds of acquiring Chlamydia and/or gonorrhea.

Methods—A cross-sectional study of 412 YBM, ages 15 to 23 years, was conducted in three U.S. cities located in the Southern U.S.

Results—Among YBM reporting frequent female application of condoms, 43.5% reported one or more instance of breakage/slippage, compared with those reporting less frequent female application (27.2%, *P*=.003). Among YBM reporting one or more event of breakage/slippage, 25.4% tested positive for Chlamydia and/or gonorrhea. In contrast, among those not reporting breakage/slippage, 17.2% tested positive (*P*=.047).

Conclusion—Findings suggest that education and behavioral interventions should seek to improve young women's skills relative to condom application and use. Further studies could also investigate whether intervention efforts should encourage some YBM to be responsible for their own condom application.

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Keywords

Condoms; young men; sexually transmitted diseases; sexual behavior

Introduction

In the United States, young Black males (YBM) continue to be disproportionally likely to acquire sexually transmitted infections (STIs), including infection with Human Immunodeficiency Virus (HIV).[1-3] The problem is exacerbated in the Southern US.[4] The consistent and correct use of male condoms is a primary method preventing disease acquisition/transmission among YBM.[5-7] Previous studies, however, have documented various errors occurring during application may lead to breakage or slippage of condoms.[8-20] Whether these errors are more common when female partners apply condoms has been addressed in only one study. That investigation was of low STI-risk college students and it found that 28% of 102 women applying condoms (over a three-month recall period) reported breakage/slippage.[18]

The purpose of this study was to determine, among a sample high-risk YBM, whether female application of male condoms for penile-vaginal intercourse (PVI) would be associated with higher or lower rates of condom breakage/slippage. The association between breakage/slippage and testing positive for laboratory-confirmed Chlamydia and gonorrhea was also tested.

Methods

Study Sample

YBM were recruited for participation in an NIH-funded randomized controlled trial of a safer sex intervention program designed for young Black males. Only the baseline data from that trial were used for this secondary study. Recruitment occurred in clinics that diagnose and treat STDs. Inclusion criteria were: self-identification as Black/African American, 2) ages 15 to 23 years, 3) having engaged in penile-vaginal sex at least once in the past two months, 4) not knowingly HIV-positive. Recruitment occurred from approximately 2010 through 2012, in a primary site (New Orleans, LA) and two secondary sites (Baton Rouge, LA and Charlotte, NC). The study enrolled 702 eligible young men, with a participation rate of 60.4%. For this secondary analysis, only those having sex with females and using condoms in the past two months were included (N=396).

Study Procedures

After providing assent, research assistants asked young men less than 18 years of age for their permission to contact one parent or guardian to obtain consent for study participation. All other young men provided written informed consent. The study protocol was approved by the institutional review boards at all participating sites.

Upon enrollment young men were instructed in the use of a laptop computer to complete an audio-computer assisted self-interview (A-CASI) lasting approximately 30 minutes. The A-

CASI was completed in a private area, with the research assistant being nearby in case participants encountered technical problems or had questions about wording. Subsequently, young men were asked to donate a urine specimen that was used for STD testing. Specimens were shipped to Quest Diagnostics and tested using the Aptima COMBO 2 Assay, a target amplification nucleic acid probe test that utilizes target capture for the detection and differentiation of ribosomal RNA (rRNA) from *Chlamydia trachomatis* and *Neisseria gonorrhoeae*. All participants were compensated $50 for their participation.

Measures

One A-CASI questions asked, “In the past two months, how often did your partner put the condom on you?” Response alternatives were provided on a 5-point scale ranging from 1) “never” to 2) “some of the time,” 3) “about one half of the time,” 4) “almost every time,” and 5) “every time.” For this study, “frequent female application” was defined as 50% or more of all penile-vaginal sex events occurring in the past two months.

Subsequent A-CASI questions assessed whether condoms had broken during PVI, slipped off during PVI, or slipped off during withdrawal (again, using the same 2-month recall period). Having one or more of these events occur was counted as a condom failure.

Data Analysis

Contingency table analyses were used to determine the bivariate association between the measure of whether females frequently applied condoms and condom failure. Subsequently, three variables were tested to determine whether they might confound the association between female application and breakage/slippage: having multiple partners (defined as two or more) during the recall period, frequency of having penile-vaginal sex during the recall period, and frequency of condom use during the recall period. Age, education, and recruitment site were included as control variables, regardless of their bivariate association with breakage/slippage. A hierarchal logistic regression model was created to include any of the three significant confounding variables and the three control variables in block 1, with block 2 containing the variable representing whether frequent female application of condoms occurred. Next, contingency table analysis was used to determine whether breakage/slippage was associated with laboratory-confirmed diagnosis of Chlamydia and/or gonorrhea. Significance was defined by an alpha value of .05.

Results

Characteristics of the Sample

Mean age was 19.7 years (SD=1.9). Exactly 50% reported current school enrollment (high school or beyond) and 94.7% reported currently being recipients of one or more financial public assistance programs. All YBM self-reported a history of one or more STIs. The mean number of condom-protected acts in the past two months was 8.47 times (standard deviation = 18.46). Of 396 YBM providing valid urine specimens, 19.4% tested positive for Chlamydia and/or gonorrhea.

Findings

Just over one-fifth of the sample (20.9%, n=83) was classified as reporting that female partners frequently applied condoms for PVI. Nearly one-third (31.3%, n=124) reported at least one event of breakage/slippage. Among those in the frequent female application group, 41.0% experienced one or more instance of breakage/slippage. In contrast, among men not reporting frequent female application, 28.8% experienced breakage/slippage (*P*=.03).

In testing the three possible confounding variables, only one was associated with breakage/slippage: Among those having multiple partners, 37.7% reported breakage/slippage versus 23.9% among those having one partner (*P* = .003). Frequency of PVI did not differ by breakage/slippage (11.55 times among those with no breakage/slippage versus 12.46 for those reporting one or more instances of breakage/slippage, t = .48, df=378, *P*=.63). Similarly, frequency of condom use PVI did not differ by breakage/slippage (7.49 times among those with no breakage/slippage versus 8.91 for those reporting one or more instances of breakage/slippage, t = .96, df=375, *P*=.34).

In a multivariate analysis controlling for age, education level, recruitment site, and whether participants had multiple partners during the 2-month recall period, the adjusted odds ratio was 1.82 (95% CI=1.07-3.11, *P*=.027), indicating that those reporting frequent female application were about 80% more likely to also report breakage/slippage.

Among YBM giving valid urine specimens and reporting one or more instance of breakage/slippage, 27.3% tested positive for Chlamydia and/or gonorrhea. In contrast, among those not reporting breakage/slippage, 17.1% tested positive (*P*=.02).

Discussion

Findings suggest that, among YBM from the Southern U.S., the practice of having a female partner frequently apply condoms for PVI may heighten the risk of condom failure; as a result, this population may be more likely to acquire an STI. It is also worth noting, however, that the alternative to the female applying the condom may have been that condoms were not used at all, thereby creating even greater risk. This is the first study of YBM to assess whether the frequency of female-partner application of condoms is related to rates of breakage and slippage. If the observed prevalence of female sex partners applying condoms to YBM is indicative of population prevalence, then approximately 20% of YBM may be at increased risk of acquiring an STI.

Subsequent studies should investigate reasons why breakage/slippage occur more frequently when female partners apply condoms to YBM. It is, for example, quite possible that female partners simply have never learned the basic application skills. It is also possible that they allow the condom to come into contact with sharp jewelry, fingernails, or teeth. Female application may also imply a lack of desire for condom use by the male partner, thus lack of mutual desire to use condoms correctly may translate into other errors/problems such as adding oil-based lubricants.

Findings are limited by the validity of self-report. The use of a convenience sample limits the generalizability of the findings to other populations of STD clinic attendees. Also, the analysis of breakage/slippage on Chlamydia/gonorrhea prevalence is limited by the selection bias inherent in any study of people attending STI clinics (i.e., the sample is limited to YBM not using condoms consistently and correctly). Whether the association between breakage/slippage and increased prevalence of these infections would occur in a non-clinic based population cannot be determined; however, that finding in this clinic population is important in relationship to the primary finding. Additionally, although we did control for possible confounding, it is important to note that this study cannot infer causality.

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