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BRIEF REPORT

Condom-Related Problems Among a Racially Diverse Sample of Young Men Who Have Sex with Men

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Abstract We described frequencies of condom-related problems in a racially diverse sample of young men who have sex with men (YMSM), and tested these condom-related problems as an explanation for racial disparities in HIV rates among YMSM. Participants were 119 YMSM from a longitudinal study of sexual minority health behaviors. Almost all participants (95.4%) experienced at least one condom error. On average, African American and non-African American YMSM experienced the same number of recent condom-related problems. Therefore, differences in condom-related problems are unlikely to explain racial disparities in HIV rates among YMSM. When serving YMSM, providers should both promote condom use and explain steps to correct condom use.

Keywords Condom error · Condom failure · YMSM · HIV prevention · STI

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Introduction

HIV prevalence remains disproportionately high among men who have sex with men (MSM) [1]. Young MSM (YMSM) exhibit particularly high HIV prevalence and are one of the few populations to demonstrate recent increases in their HIV infection rate [1]. Racial disparities in HIV prevalence exist among YMSM; African Americans have a higher prevalence than non-African Americans [1]. This is despite an increasing body of evidence that indicates African American YMSM engage in HIV transmission behaviors such as unprotected anal intercourse and drug use prior to sex at similar or lower rates than other YMSM [2, 3]. Researchers have not reconciled how African American YMSM have higher HIV rates yet lower HIV transmission risk behavior rates, compared to other YMSM.

One potential and unexplored explanation for this phenomenon is that African American YMSM may engage in safe sexual practices like condom use at similar levels as other YMSM, but that African American YMSM experience more condom errors and related problems than their counterparts. Common condom errors include not checking the condom package for damage before use, not leaving space at the end of the condom when placing it on the penis, and incomplete usage—putting the condom on after sex begins or taking the condom off before sex ends [4]. Research indicates that among non-YMSM populations, making condom errors can lead to condom failures, i.e., the condom breaking during sex or slipping off during or after sex [5]. Among African American males, erection problems during protected sex also may relate to condom removal and unprotected sex [6]. Nonetheless, the relationship between HIV risk and condom errors, failures, and erection-problems has not been explored in a racially diverse sample of YMSM.

This study has two goals. First, we aim to report the frequency of condom errors, and to characterize the relationship between condom errors and failures, in a racially diverse sample of YMSM. Second, we aim to test racial differences in condom-related problems as an explanation for racial disparities in HIV rates among YMSM. We hypothesize that African American YMSM will experience condom errors and failures more frequently than non-African American YMSM. Results will indicate to what extent behavioral interventions should focus on correct condom use as an effective HIV prevention mechanism among YMSM.

Methods

Participants and Procedures

A community-based convenience sample of racially diverse, 16–20 year old Lesbian, Gay, Bisexual, Transgender (LGBT), queer, and/or "questioning" youth living in Chicago participated in this study. Youth were recruited over 18 months from 2007 to 2008 from multiple sources and were categorized into one of four groups based on their recruitment source: another participant, staff member, community event or flyer or e-mail advertisement, or unknown. To encourage peer-recruitment, participants were given palm cards with contact information for the study and were compensated $10 for each eligible youth they referred that scheduled and attended an assessment interview.

Prior to enrollment, trained staff used a two-step process to determine each potential participant's decisional capacity to consent [7]. The first step involved a determination of the participant's understanding of the study goals as previously explained by staff during a review of the procedures. In step two, potential participants were asked questions designed to assess their capacity to understand, appreciate, reason with, and express a choice about participation in the specific protocol using a modified version of the Evaluation to Consent. If the staff person had any doubts about decisional capacity, s/he was instructed to seek consultation from a study principal- or co-investigator before proceeding. A Federal Certificate of Confidentiality was obtained, and relevant Institutional Review Boards approved a waiver of parental permission for participants younger than age 18.

Surveys were administered in a private room at a youth center affiliated with a large LGBT community-based health center or at the University of Illinois at Chicago. Measures were completed using an Audio Computer-Assisted Self-Interview (ACASI), which lasted approximately one hour. Participants received $40 for completing the baseline interview, from which data are reported.

Measures

Demographics

We assessed demographics including age, race/ethnicity, education, socioeconomic status (SES), biological sex, gender identity, and sexual orientation.

Condom errors, Failures, and Erection-Related Problems

We administered an abbreviated adaptation of the Condom Use Errors and Problems Questionnaire [8] that included technical condom errors such as "not checking the condom for visible damage." The stem question was "When you used condoms during the last 6 months, how often was…" followed by the specific item, with response options ranging from 1 = always to 5 = never. We recoded all response options to range from 0 to 4, such that 0 represented "Never" making an error, and 4 represented "Always" making an error. Based on responses to these items, we created dichotomous variables that indicated if the participant experienced an error, failure, or erection problem, and frequency variables that indicated how often participants experienced each.

Analyses

We first use descriptive statistics to describe our sample and the frequency of condom errors, failures, and erection problems. We then report associations between errors, failures, and erection problems using Pearson correlations. Finally, we use Chi-square and *t*-tests to report comparisons of these behaviors by race. Statistical analyses were conducted using SPSS 16.0. Missing data were excluded from analyses.

Results

Sample and Demographics

The total number of participants that completed the baseline assessment was 249. Of these, 127 were born female and thus excluded from analyses. Three male participants were not administered the Condom Errors and Problems portion of the ACASI. Of the 119 remaining male participants, 87 (73.1%) reported using condoms with a partner in the last six months during oral, anal, or vaginal sex, or while using sex toys. These condom-using YMSM served as the analytic sample.

The mean participant age reported was 18.5 years ($SD = 1.13$). Almost half ($N = 40$, 46.0%) of participants

were African American. Other participants were White ($N = 19$, 21.8%), Hispanic/Latino ($N = 10$, 11.5%), Multi-racial ($N = 9$, 10.3%), Asian ($N = 3$, 3.4%), Native American ($N = 2$, 2.3%), or Other-race ($N = 4$, 4.6%). Almost two-thirds ($N = 57$, 65.5%) of participants reported their sexual orientation as gay; others reported bisexual ($N = 23$, 26.4%), questioning ($N = 6$, 6.9%), and heterosexual ($N = 1$, 1.1%). Most participants ($N = 61$, 70.1%) reported middle class SES, while 11 participants (12.6%) reported upper class SES, and 15 participants (17.2%) reported lower class SES.

Frequency of Condom Errors, Failures, and Erection-Related Problems

Almost all participants ($N = 83$, 95.4%) made at least one condom error, while only 4.6% of participants ($N = 4$) made no condom errors, in the last six months. The mean number of condom errors (range of 0–9) was 3.41 ($SD = 1.87$). Condom failures were less common than errors, occurring in 44.8% ($N = 39$) of the sample. The mean number of condom failures (range of 0–3) was .72 ($SD = .95$). Over half ($N = 48$, 55.2%) of participants experienced no failures, 24.1% ($N = 21$) experienced one, 13.8% ($N = 12$) experienced two, and 6.9% ($N = 6$) experienced all three. Erection problems were as common as condom failures, occurring for 46.0% ($N = 40$) of participants.

Table 1 provides the mean frequency of each error reported. The most frequently reported errors were not squeezing air out from the end of the condom before use ($M = 1.70$, $SD = 1.70$), not leaving space at the end of the condom ($M = 1.28$, $SD = 1.55$), and not checking the condom for visible damage ($M = 1.24$, $SD = 1.53$). Breakage occurred most frequently of all condom failures ($M = .43$, $SD = .87$). Erection loss during application occurred more frequently ($M = .79$, $SD = 1.22$) than during sex ($M = .67$, $SD = 1.11$).

Relationship between Condom Errors, Failures, and Erection-Related Problems

We tested whether the frequency of individual condom failures and erection problems related to individual condom errors. The frequency of slippage during removal was related to early removal of the condom ($r = .33$, $P < .01$), contact with sharp object ($r = .30$, $P < .01$), and putting the condom on upside down ($r = .24$, $P < .05$). Slippage during sex was related to early removal ($r = .35$, $P < .01$), late application ($r = .25$, $P < .05$), contact with sharp object ($r = .31$, $P < .01$), and putting the condom on upside down ($r = .35$, $P < .01$). Breakage was related to

Table 1 Comparisons of mean (SD) frequency of condom errors, failures, and erection loss, by race[a]

Condom-related problem	Overall	African Americans	Non-African Americans	Test Statistic
Error				
Contact with sharp object	.28 (.77)	.12 (.52)	.41 (.93)	−1.70[c]
Early removal	.43 (1.03)	.35 (.95)	.49 (1.10)	−.63
Late application	.39 (.84)	.13 (.33)	.62 (1.05)	−2.83[b]
Put condom on upside down	.70 (1.26)	.40 (.93)	.96 (1.45)	−2.10[b]
Used oil-based lube	.91 (1.32)	1.18 (1.47)	.68 (1.14)	1.78[c]
Did not leave space at the end of the condom[d]	1.28 (1.55)	1.40 (1.68)	1.17 (1.43)	.69
Did not use water-based lube[d]	1.15 (1.47)	1.03 (1.37)	1.26 (1.56)	−.72
Did not check for visible damage[d]	1.24 (1.53)	1.07 (1.46)	1.38 (1.60)	−.93
Did not squeeze air out from end of condom[d]	1.70 (1.70)	1.92 (1.75)	1.51 (1.65)	1.14
Failure				
Condom slippage during sex	.28 (.64)	.23 (.48)	.32 (.76)	−.68
Condom slippage during removal	.37 (.73)	.34 (.65)	.40 (.79)	−.30
Condom breakage	.43 (.87)	.33 (.76)	.51 (.95)	−.99
Erection Loss				
During sex	.67 (1.11)	.57 (1.01)	.74 (1.18)	−.67
While applying condom	.79 (1.22)	.57 (1.03)	.95 (1.32)	−1.27

[a] $N = 87$ (40 African American, 47 non-African American) unless item is italicized. For these items there was a small decrease in number of respondents, due to some participants selecting "not applicable" if they had not engaged in insertive anal sex

[b] significant at $P < .05$

[c] significant at $P < .10$

[d] Reverse coded to represent consistently the occurrence of an error or failure

early removal ($r = .51$, $P < .001$), late application ($r = .53$, $P < .001$), contact with sharp object ($r = .55$, $P < .001$), using oil-based lubricant ($r = .21$, $P = .05$), and putting the condom on upside down ($r = .35$, $P < .01$). Erection problems during application were related to contact with sharp object ($r = .34$, $P < .01$) and putting the condom on upside down ($r = .56$, $P < .001$). Erection problems during sex also were related to contact with sharp object ($r = .31$, $P < .01$) and putting the condom on upside down ($r = .31$, $P < .01$).

Differences by Race

We first used a Chi-square test to explore differences in the proportion of non-condom usage by race. Almost equal proportions of African Americans (29.8%, $N = 17$) and non-African Americans (24.2%, $N = 15$) did not use condoms in the last six months, Chi-square (1, $N = 119$) = .54, *ns*.

We then used *t*-tests to compare overall errors, failures, and erection problems among condom-using African American YMSM (N = 40) and condom-using non-African American YMSM (N = 47). There was a significant effect of race on experiencing any erection problem, $t\ (85) = -2.50$, $P < .05$; non-African Americans were more likely to experience any erection problem than African Americans. There was no significant effect of race on overall number of condom errors experienced, $t\,(85) = -1.58$, *ns*; non-African American YMSM reported 3.70 condom errors, while African American YMSM reported 3.07 errors, on average. No significant effect of race on overall number of condom failures was found, $t\ (85) = -.50$, *ns*.

We next used *t*-tests to compare how often each racial group experienced each condom error, failure, and erection-problem. Table 1 presents these results. Non-African Americans more frequently made two errors that significantly related to condom failure—applying a condom late, $t\ (85) = -2.83$, $P < .01$, and putting the condom on upside down, $t\ (85) = -2.10$, $P < .05$. There was a trend for non-African Americans to more frequently make another error that significantly related to condom failure—contact with a sharp object, $t\ (85) = -1.70$, $P < .10$. A second trend emerged, in the opposite direction. African Americans more frequently used oil-based lubricant, $t\ (84) = 1.78$, $P < .10$, an error that related to breakage. Racial groups did not differ significantly, nor did trends emerge, in terms of specific condom failure or erection problem frequencies (*p*s $> .10$).

Discussion

To our knowledge, our study is the first to investigate condom errors, failures, and erection-related problems in a sample comprised solely of racially diverse YMSM—a group that experiences significant HIV disparities. Overall this sample demonstrated a relatively high prevalence of condom errors, failures, and erection-related problems compared to past study samples [4, 6, 8]. For example, the proportion of our participants that reported at least one condom error in the past six months (95%) far exceeds the highest prevalence previously reported (78%) [6].

There are several potential explanations for these YMSM having more condom-related problems than other sexually active populations. One is that sex education in schools and other venues may not be meeting the needs of YMSM, leaving them relatively uneducated about the value or details of correct condom use. Many U.S. sex education programs emphasize abstinence until marriage, a right not currently available to same-sex couples in most states. Most of these programs also emphasize condom use among heterosexuals and as a prophylactic, but fail to account for condom use among other sexually active populations. Messages that would benefit MSM, including which type of lubrication to use (water-based) and not use (oil-based) during protected sex, are currently lacking in many sex education programs.

We explored differences in condom-related problems by race. In the current sample there were no significant differences in overall condom errors made, by race. However, African Americans less often made two errors that related to condom failure (late application, upside down application). Two trends also emerged—African Americans less often made the error of contact with sharp object and more often made the error of using oil-based lubricant, compared to non-African Americans. There were no significant differences in condom failures or erection problems by race. Given discrepant HIV rates by race, we hypothesized that African American YMSM may make more errors and experience more failures overall, which could lead to higher rates of HIV transmission even in the context of condom use. But, this was not the case, suggesting either that racial differences in condom errors and failures do not account for differences in HIV prevalence, or that the specific errors that tended to be made more often by African Americans are more closely related to disease transmission.

Our findings must be interpreted in the context of several study limitations. First, our sample size was modest, which could limit our ability to detect the significance of small effects. Further research is needed on larger samples to replicate our pattern of race differences. Nevertheless, our sample of racially diverse YMSM is one that is understudied and hard to recruit. Further, our results revealed several significant differences in condom use by race, despite our relatively small sample size. Our sample was also over-representative of African Americans, which

is a strength in that African American YMSM are understudied and at elevated risk for HIV, but also a weakness in terms of our ability to make comparisons across all racial sub-groups. Next, self-report was used to assess all condom-related problems. Because this topic is sensitive, participants may not have responded honestly or may have been influenced by social desirability bias [9]. However, few, if any, measurement alternatives exist that are more reliable and cost-effective than our ACASI approach. Lastly, we used an adaptation of the Condom Use Errors and Problems Questionnaire [8] to assess frequency of condom errors and failures. This is a strength in that this measure has been used before with similar populations, but a limitation in that the survey asks about condom use pertaining to oral, vaginal, and anal sex, not specifically anal sex, which would be most relevant to this sample and to increasing HIV rates within this population.

The frequency of condom errors was similar and very high among African American and non-African American YMSM. The consequences of condom errors are clear, as their frequency was significantly related to the frequencies of condom failures and erection problems. Our results indicate that YMSM need interventions that not only promote condom use generally but also build motivation and behavioral skills needed for correct condom use. These messages can be delivered in sex education programs, by medical providers or health educators, with educational literature, or online. Also, providing instructions for correct use on condom packaging or with distribution may be an effective means of reducing errors, failures, and resultant HIV transmissions. Whatever the medium, our results clearly indicate a need for increased efforts to reduce condom errors among racially diverse YMSM.

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