

PREVENTION MYTHS AND HIV RISK REDUCTION BY ACTIVE DRUG USERS

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Drug injectors and crack users (526) in South Florida responded to a survey questionnaire that was designed to examine belief in the effectiveness of various strategies, other than condom use, employed to reduce personal risk of contracting HIV during sexual acts. Each strategy was believed to be effective by at least one quarter of the study participants. Factor analysis was used to group these strategies. Subsequent multivariate analysis indicated that the participants who believed in the effectiveness of HIV prevention strategies other than condom use were also less likely to report using condoms. These findings highlight the need for prevention interventions to elicit prevention myths and the full range of risk reduction strategies practiced.

Across the United States, drug injectors and crack users are at high risk for sexually transmitted disease (STDs) (Marx, Aral, Rolfs, Sterk, & Kahn, 1991; McCoy, Metsch, McCoy, Lai, 1999; Ross, Hwang, Zack, Bull, & Williams, 2002; Siegal, Falck, Wang, & Carlson, 1996), including HIV infection (Kral, Blumenthal, Booth, & Watters, 1998). Much of the magnitude of the spread of HIV within inner-city and minority populations can be attributed to substance abuse and unprotected sexual activity (Kral, Blumenthal, Lorvick, Gee, Bacchetti, & Edlin, 2001; Strathdee et al., 2001). The number of active drug users engaging in risky behavior remains high (Kwiatkowski, Stober, Booth, & Zhang, 1999; Rhodes et al., 1999); for example, according to a national survey, only 40% of injection drug users (IDUs) used a condom at last intercourse (Anderson, Wilson, Doll, Jones, & Barker, 1999). Studies have suggested that psychoactive drugs may influence both the desire and the ability to use barrier protection (Kusseling, Shapiro, Greenberg, & Wenger, 1996; Robles et al., 1998; Ross, Timpson, Williams, & Bowen, 2003). In addition, drug users at highest risk for HIV transmission are least likely to stop engaging in HIV risk behaviors (Celentano, Munoz, Cohn, & Vlahov, 2001).

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Sexual risk reduction strategies, other than condom use, have been documented among various populations including: men who have sex with men (Aveline, 1995; Levine & Siegel, 1992), Hispanic men in California (Forrest, Austin, Valdes, Fuentes, & Wilson, 1993), adults in eastern Europe (Wilson, Uuskula, Feldman, Holman, & Dehovitz, 2001), women living in public housing developments (Sikkema et al., 1995), clients of STD clinics (Crosby, Newman, Kamb, Zenilman, Douglas, & Iatesta, 2000; Wilson et al., 2001), and women receiving public assistance in Missouri (Crosby, Yarber, & Meyerson, 2000). These studies suggest the importance of exploring the full range of HIV prevention strategies, especially when identified risk reduction strategies may be ineffective or ill conceived. However, none of these studies focused on the sexual risk reduction strategies practiced by high-risk drug users.

Within this context, previously reported qualitative interviews, conducted with 92 active drug injectors and crack users, identified a variety of strategies used to reduce personal risk of contracting HIV during sexual acts (Metsch, McCoy, Wingerd, & Miles, 2001). These strategies or prevention myths ranged from men reporting washing their penis in bleach as a postexposure strategy to women “douching” as a means of prevention. Although a variety of alternative HIV prevention strategies were described during the interviews, further research was needed to assess whether or not these prevention strategies were generally believed to be effective.

The present study builds on our prior work by exploring the beliefs of a large group of active crack and injection drug users concerning the effectiveness of identified alternative HIV prevention strategies used in sexual situations. In addition, we examine the relationship between these beliefs and reported use of condoms.

MATERIALS AND METHODS

STUDY PROCEDURES

For this study, questionnaires were administered to 526 active drug users recruited in high-risk neighborhoods in South Florida. Men and women were recruited in each study site using targeted sampling (Watters & Biernacki, 1989). High-risk neighborhoods were identified based on incidence of reported rates of arrests for drug sales, and drug overdoses, prostitution, STDs and HIV infection. In the targeted areas, frequent drug use was confirmed by key informants and by ethnographic observation.

Outreach workers interviewed each potential study participant, explained the purpose of the study and determined the contact's qualifications for participation. They also provided directions to the interview site or provided transportation, scheduled the interview and informed the contact about the monetary incentive fee. Prior to questionnaire administration, study eligibility was confirmed, a description of the study was provided, and a document assuring confidentiality and outlining the voluntary nature of the interview process was given to the study participant. Upon completion of the interview, the respondent was paid \$20 for his or her time. Such respondent payments act as an incentive for study participation and demonstrate that the study values the respondent's time and participation.

Eligible participants were at least 18 years of age, were willing to sign an informed consent form, reported at least one episode of vaginal sex in the past week, and reported use of crack or drug injection at least once within the past week. Self-reported drug use was subsequently verified by urine samples tested for opiate or cocaine metabolites with the On-Track drug test (Roche Diagnostics). During the consent process, potential participants were informed that their participation was

completely voluntary, and that they could refuse to answer any questions to which they objected. All study forms and procedures were approved by the University of Miami Institutional Review Board for the protection of human subjects.

The Sexual Risk Reduction Questionnaire (SRRQ) was developed specifically for the study and was designed to capture information on sociodemographic variables and drug use history, as well as documenting beliefs related to efficacy of HIV prevention strategies. The SRRQ test-retest reliability study was conducted using a 72-hour interval between questionnaire administrations. Internal consistency, intrascale homogeneity and test-retest reliability were assessed using Cronbach's alpha, which ranged from .30 to .88 (Weatherby, McCoy, & Williams, 1998). Reliability was high (over .70) for over 80% of the questionnaire items. Discrepancies did not appear to reflect systematic decreases or increases in self-reports.

Trained research assistants administered the questionnaire using audio-CAPI (computer-assisted personal interviews) technology developed by Nova Research Company using their QDS program. These interviews were conducted in private and took approximately 2 hours, with one 5-minute break. During the computer-assisted interview, text was presented on the computer screen and simultaneously presented orally through headphones. Computer-assisted interviews have been successfully used with populations of active drug users (Williams et al., 2000). It has been demonstrated that individuals are more likely to report sexual risk behavior when responding to an automated interview, compared with a face-to-face interview (Boekeloo et al., 1994; Hasley, 1995; Locke et al., 1992; Sanders et al., 1994). QDS was used to administer the audio-CAPI questionnaire and was also used as the data entry mechanism. In addition, QDS produced all of the associated materials needed for data documentation (e.g., code books) and also provided data management tools. The program application allows for appropriate validity, edit, and range checks, as well as appropriate variable definitions. Software packages used for analysis included SAS (Version 8) and SPSS (Version 11).

RESULTS

SAMPLE CHARACTERISTICS

Sociodemographic characteristics of the 526 study participants are provided in Table 1. The study population included both men (59%) and women (41%). Racial and ethnic minorities were also represented: 52% of study participants self-identified as Black, 31% as White, and 15% as Hispanic. Approximately 43% were at least 40 years old. Study participants were disadvantaged: Half had less than a high school diploma and 38% had unstable housing. All study participants were active drug users, defined as having injected drugs or used crack within the previous week. Almost all (94%) had used crack within the previous 30 days and over one quarter (27%) reported injection drug use within the previous 30 days.

Risky sexual behavior was commonly reported by the study population. Almost one quarter of the study participants had engaged in a commercial sex transaction, defined as participating in an exchange of sex for money with at least one of their previous three sex partners. Condom use with up to three previous sex partners was determined: consistent condom use with all (up to three) of them was reported by only 35% of the study participants.

TABLE 1. Study Demographic Characteristics (N = 526)

	Percent
Gender	
Male	59.1%
Female	40.9%
Race/Ethnicity	
Black	51.7%
White	30.6%
Hispanic	15.0%
Other	2.7%
Age	
< 40	56.8%
40 +	43.2%
Education	
< High School	50.2%
High School +	49.8%
Condom Use (last 3 partners)	
Yes	34.7%
No	65.3%
Housing Status	
Stable Housing	61.6%
Unstable Housing	38.4%
Commercial Sex Worker	
Yes	24.3%
No	75.7%
Crack User (last 30 days)	
Yes	93.6%
No	6.4%
IDU (last 30 days)	
Yes	27.3%
No	72.7%
HIV Positive	
Yes	17.3%
No	82.7%

BELIEF IN EFFECTIVENESS OF HIV PREVENTION STRATEGIES

Participants were questioned regarding their belief in the effectiveness of alternative HIV prevention strategies elicited during the previous qualitative study. Each of the 14 identified sexual risk reduction strategies was believed to be an effective method of HIV prevention by at least one quarter of the study participants (Table 2). Condom use by the man was endorsed as an effective HIV prevention strategy by 95% of the study participants. Not having sex was identified as effective by 88% of the sample and having sex with only one partner was identified by 79%. Having sex with only “regulars” or “dates” (defined as someone other than a total stranger) was endorsed as an effective HIV prevention strategy by 42% of the study participants. One third of the study sample endorsed the effectiveness of “only having sex with healthy-appearing people” and “taking antibiotic pills,” respectively. Not allowing the man to ejaculate was identified as an effective HIV prevention strategy by half of the study population (49.6%), and urinating after sex was considered to be effective by 38% of the sample. Various agents for cleaning the genital organs (soap, bleach, and alcohol) were endorsed as effective by 28-50% of the study participants. Of the HIV prevention strategies exclusive to women, 37% of the study participants agreed

TABLE 2. Client's Belief That Identified Strategies Are Effective to Prevent HIV (N = 526)

Strategy	% in Agreement
Man uses condom	94.8
Not having sex	88.1
Having sex with only one partner	79.0
Washing genitals with soap	50.0
Not letting partner ejaculate	49.6
Douching after sex	43.8
Having sex with "regulars" or dates only	41.8
Urinating after sex	37.7
Washing genitals with alcohol	37.0
Douching before sex	36.7
Taking antibiotics	32.1
Having sex with only healthy-appearing people	31.9
Washing genitals with bleach	27.4
Woman takes birth control pills	24.0

that cleansing with a douche prior to sex would effectively prevent HIV transmission and 44% agreed that cleansing with a douche after sex was effective. Taking birth control pills was considered to be an effective HIV prevention strategy by 24% of the study participants. Both men and women answered questions regarding the effectiveness of prevention strategies used exclusively by women.

FACTOR ANALYSIS

Factor analysis was used to group interdependent variables into descriptive categories. For this study, principal component analysis was employed to discern the factor structure of the data. The Kaiser rule and a scree plot were employed to determine the optimal number of factors. The 14 identified HIV prevention strategies were classified into factors, based on a "strong" loading of $\geq .60$. Subsequently, each of the factors was assigned a descriptive label.

Four factors—Alternative Strategies, Safer Sex, Abstinence, and No Ejaculation—were chosen as the optimum, according to the Kaiser rule of keeping all components with eigenvalues greater than 1.0. In addition, a scree plot was computed and confirmed that four factors were ideal. The factors were rotated using various methods, but the Quartimax rotational method gave the cleanest and most interpretable loadings. Factor 1, Alternative Strategies, included urination, cleaning genitals with various agents, taking antibiotics, taking birth control pills, only having sex with "regulars" or "dates," and only having sex with people who appear healthy. Factor 2, Safer Sex, was formed by beliefs regarding "having sex with only one partner" and "man uses condom." Factor 3, Abstinence, represented the belief that "not having sex" would effectively prevent transmission of HIV. Factor 4, No Ejaculation, endorsed the belief that "absence of ejaculation by the male sex partner" would effectively prevent HIV infection (Table 3).

MODEL PREDICTING CONDOM USAGE

Because of the importance of consistent condom use, condom use was defined as "use of a condom with *all* of the (up to) three previous sex partners." Multiple logistic

TABLE 3. Factor Analysis

Factor 1: Alternative strategies
Washing genitals with bleach
Washing genitals with alcohol
Washing genitals with soap
Urinating after sex
Sex with “regulars” or dates only
Douching before sex
Douching after sex
Woman takes birth control pills
Taking antibiotics
Having sex only with healthy-appearing people
Factor 2: Safer sex
Having sex with only one partner
Man uses condom
Factor 3: Abstinence
Not having sex
Factor 4: No ejaculation
Not letting partner ejaculate

regression was then used to build a model predicting condom use (Table 4). Logistic regression analysis demonstrated that study participants who believed in the effectiveness of alternative strategies (Factor 1) to prevent HIV transmission were less likely than other study participants to have consistently used a condom (odds ratio [OR] = 0.8; 95% confidence interval [CI] = 0.6, 0.9).

Independent variables used to construct the model were the four previously explained factor scores and other theoretically relevant variables: Commercial Sex Worker (yes/no), religion (any religious identification/none), IDU (yes/no), crack user (yes/no), HIV-positive (yes/no), age (< 40/ 40 +), education (less or more than high school), work (work/no work), monthly income (< \$400/ \$400 +), housing (stable/unstable), children (yes/no), and race/ethnicity (Black/White/Hispanic/other). Analysis demonstrated that the only independent variable positively related to consistent condom use was report of commercial sex activity (OR = 1.8; 95% CI = 1.1, 2.8). The other significant independent variables were negatively associated with condom use. IDUs were half as likely as noninjectors to have used condoms with their last three partners. Hispanics were less likely than non-Hispanics to have used condoms (OR = 0.4; 95% CI = 0.2, 0.9).

DISCUSSION

This study builds on our prior work that identified a variety of strategies other than condom use employed by active drug users to prevent sexual transmission of HIV (Metsch et al., 2001). Many of these alternative strategies could be viewed as HIV prevention myths and include both preexposure and postexposure strategies for preventing acquisition of HIV. The importance of the present study is its clear demonstration that substantial numbers of sexually active drug users believe these identified alternative strategies to be effective methods of preventing the spread of HIV. Furthermore, our findings illustrate that drug users who believe in the effectiveness of these prevention myths were also less likely to report consistent condom use with their last three sex partners. Together, these findings support the need to extend the approach for

TABLE 4. Model Predicting Condom Usage

Parameter	Odds Ratio	95% Confidence Interval
Alternative strategies (Factor 1)	0.8	0.6, 0.9
Commercial sex worker	1.8	1.1, 2.8
Injection drug user	0.5	0.3, 0.8
Male ^a	1.4	0.9, 2.2
Age ^a	1.0	0.6, 1.7
Black ^a	0.9	0.6, 1.4
Hispanic	0.4	0.2, 0.9
Other Race ^a	1.0	0.6, 1.7

^aLeft in model although not significant.

HIV prevention to consider the full range of beliefs and behaviors of at-risk individuals (O'Leary, 2002).

HIV prevention strategies that would generally be considered "safe" or "safer" sex by health professionals, such as condom use, abstinence, and having sex with only one partner, were also the strategies most likely to be endorsed as effective by the study participants. Therefore, it appears that our study participants are knowledgeable about the correct set of prevention strategies but that their prevention arsenals also include a variety of prevention myths. Our findings suggest that high-risk active drug users may be able to ignore recommended risk reduction practices, such as condom use, because they believe alternative HIV prevention strategies are also effective.

The importance of the social networks and drug buddies should not be underestimated (Latkin et al., 2003; Miller & Neaigus, 2001). The social networks of drug users provide an opportunity for ineffective prevention strategies to be shared and endorsed. The strength of network associations has been demonstrated by the fact that higher proportions of high-risk network members are associated with greater participation in risky sex practices (Friedman et al., 1997; Neaigus et al., 1994). Drug users rely on their friends and social contacts to obtain drugs and to get high. Locales such as crack houses, shooting galleries and "get-off" houses are venues for interaction among drug users and are also sites where high-risk sexual behaviors occur. Therefore, there are numerous opportunities to share prevention myths and for these myths to be diffused throughout specific networks and communities.

Prevention efforts may be even more challenging when attempting to modify the health behaviors of active drug users whose sexual and HIV prevention behavioral choices may be affected by the physiological and psychological consequences of active drug use. The physiological difficulty gaining or maintaining an erection may be one reason that active drug users choose prevention strategies other than condom use. The psychological consequences of being high and related impairment of psychological functioning may include reduced inhibition and failure to consider HIV prevention at the time of the sex act. Sexual expectations regarding the likelihood of condom use may also be linked to drug-using situations (LaBrie et al., 2002). These factors, alone or in combination, may provide an impetus for the use of alternative strategies that can be practiced subsequent to sexual activity. A final factor is, as stated by a prior study, that it is very difficult to practice "safe sex" when the sex act itself is an act of

desperation, for example when sex is engaged in for the purpose of obtaining drugs (Hudgins & Dreher, 1993).

FUTURE DIRECTIONS

This study documented belief in the effectiveness of various alternative HIV risk reduction strategies within a high-risk group of sexually active drug users and demonstrated a negative association between belief that these strategies were effective and consistent condom use. However, these findings take on additional urgency since populations other than illicit drug users also report using alternative HIV prevention strategies identified by this study, such as using oral contraceptives and douching (Crosby, Yarber, et al., 2000; Shain et al., 2002) and similar strategies, including urination after sex, douching and use of oral contraceptives, have been reported for protection against sexually transmitted disease in general (Crosby, Newman, et al., 2000). Given the public health importance of stemming the spread of HIV through reduction in risk behaviors, and the apparent prevalence of misconceptions regarding effective risk reduction strategies, it seems appropriate that interventions conducted among all risk groups should take into account the risk reduction beliefs and perceived social norms of their participants. Interventions must actively work to debunk myths and beliefs in ineffective prevention strategies. However, practice of ineffective strategies can be framed in a positive light as evidence of a concern for HIV prevention that needs to be refocused and redirected into effective HIV prevention efforts. Future research should continue to focus on sexual decisionmaking practices and the relationship between HIV risk reduction beliefs and behaviors.

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