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Symptoms of substance dependence and risky sexual behavior in a probability sample of HIV-negative men who have sex with men in Chicago

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ABSTRACT

Objective: This study examines the relationship between self-reported symptoms of substance dependence and risky sexual behavior among 187 HIV-negative men who have sex with men.
Method: In a supplement to a Chicago household survey, using random probability sampling, men who reported consensual sex with other men or who identified as gay or bisexual were selected for interviews. Participants reported on sexual behavior, substance use, and symptoms of substance dependence related to past year use of alcohol, marijuana, cocaine, and sedatives, tranquilizers or pain relievers. Risky sexual behavior was defined as unprotected insertive or receptive anal intercourse *plus* having multiple partners, casual partners, or a partner who was HIV positive or of unknown serostatus.
Results: Risky sexual behavior in the past six months was significantly and positively associated with alcohol dependence symptoms, cocaine dependence symptoms (receptive only), and prescription drug dependence symptoms (insertive only). Confirmatory factor analyses revealed that dependence symptoms loaded on separate factors by substance, which in turn loaded on an overarching dependence symptoms factor. In structural equation models, individual substance factors were not significantly associated with sexual risk behavior, however the higher order dependence symptoms factor was significantly and positively associated with both receptive and insertive risk behavior.
Conclusions: MSM with symptoms of multiple substance use dependencies are more likely to be engaged in sexual behavior that places them at risk for acquiring HIV and other sexually transmitted infections. Alcohol and drug abuse treatment providers should be aware of the need for HIV testing and counseling in this population.

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1. Introduction

Although overall rates of HIV infection have declined considerably since the mid-1980s, current levels among urban men who have sex with men (MSM) remain high, and a resurgence of the epidemic appears to be imminent (Centers for Disease Control and Prevention, 2005; Gross, 2003; Jaffe et al., 2007; Sullivan et al., 2009).

A substantial body of research has developed on the subject of alcohol and illicit drug use among MSM, and its relationship to unsafe sex and the spread of HIV (e.g. Celentano et al., 2006; Colfax et al., 2004; Irwin et al., 2006; Seage et al., 1998; Stall and Purcell, 2000; Trocki and Leigh, 1991; Vanable et al., 2004). Several studies have reported higher rates of illicit drug use among MSM than among heterosexual men or men in general (Hughes and Eliason, 2002; McKirnan and Peterson, 1989; Skinner and Otis, 1996; Stall and Wiley, 1988; Woody et al., 2001), although some of these differences may be due to reporting biases (Fendrich et al., 2008; Mackesy-Amiti et al., 2008). Moreover, an abundance of studies have reported an association between unsafe sex and substance use among MSM (Beckett et al., 2003; Darrow et al., 2005; Fernandez et al., 2005; Garofalo et al., 2007; Klitzman et al., 2002; Koblin et al., 2003; Mansergh et al., 2001; Shoptaw and Reback, 2007; Stall and Purcell, 2000; Stueve et al., 2002).

Fewer studies have specifically addressed the issue of substance abuse, problem substance use, or clinical symptoms of substance dependence among MSM in comparison to other men. Two recent studies that did examine symptoms of substance dependence found some evidence of more dysfunctional substance use among MSM than among other men (Cochran et al., 2004; Mackesy-Amiti et al., 2009). These findings are consistent with other reports of mental health disparities affecting lesbian, gay, bisexual, and trans-

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gender (LGBT) individuals (Dean et al., 2000; Gay and Lesbian Medical Association and LGBT Health Experts, 2001). These psychosocial health problems are of concern in their own right, but moreover they may be associated with increased risk of STI and HIV infection. In a multi-city telephone survey of MSM, Stall et al. (2003) found that greater numbers of psychosocial health problems were significantly and positively associated with high-risk sexual behavior and HIV infection. Similar findings were reported in a community-based sample of young MSM in Chicago (Mustanski et al., 2007).

In a study that addressed the relationship between dysfunctional drug use and risky sexual behavior, Ryan et al. (1999) found that subjects who had a history of *both* alcohol and other substance use disorders (but not just one type of disorder) had a significantly elevated risk of HIV infection. Yet, these were not associated with elevated rates of unprotected anal intercourse among HIV-negative men. Thus, there is a surprising lack of research suggesting direct links between substance dependence and high-risk sexual behavior. The existing research suggests that HIV risk is elevated when there are combined alcohol and other substance abuse disorders. We would expect that any form of substance dependence should elevate individual involvement in high-risk sexual behavior. Multiple lines of research (e.g. McKirnan et al., 2001; Ostrow, 2000) have underscored the disinhibiting role that substance intoxication plays for MSM in the context of sexual behavior. Accordingly, we would expect that those who are substance dependent – irrespective of the type of substance they are dependent on – would be more likely to experience intoxication and thus place themselves more frequently in situations where the risk of STI transmission is increased. Additionally, while any single dependency should increase risk, multiple dependencies should lead to further increases in risk behavior. It should be underscored that the dearth of research into this issue is surprising and that the establishment of such links is potentially critical for HIV and STI risk prevention programming. Such findings would reinforce the potential value of integrating risk prevention messages into substance abuse treatment programs tailored for MSM.

The present study examines associations between self-reported symptoms of substance dependence (for alcohol, marijuana, cocaine, and prescription drugs) and risky sexual behavior in a probability sample of men who have sex with men in an urban community. We then test alternative structural equation models, comparing substance-specific effects with a summative effect.

2. Methods

2.1. Sample

The MSM Supplement employed a household survey in two Chicago ZIP codes with a high population of MSM, based on consultation with a community advisory board. Subjects were randomly sampled using multistage probability methods; details have been published elsewhere (Fendrich et al., 2008). Surveys were administered from September 2002 through January 2003. Households were screened by interviewers, and adult males who had a history of consensual sex with other men or who identified themselves as gay or bisexual were selected to be interviewed. Screening was initiated with a resident at 56% of the selected households. The response rate for the survey was 35%, and the cooperation rate was 70%.[1] Informed consent was obtained by the interviewer prior to administration of the survey. Following the survey, respondents were asked to provide oral fluid and urine, specimens for drug testing. Respondents were compensated for their time with payments of $40 for the survey, and $10 for each biological specimen provided. A total of 216 interviews were completed for this study. Since the number of men who reported a positive HIV test was too small for a stratified analysis, they were excluded from the present analysis, leaving a sample of 187 HIV-negative MSM.

2.2. Measures

Participants completed an audio computer-assisted self-interview (ACASI) survey that included questions on substance use, drug and alcohol treatment, sexual behavior, HIV testing and serostatus, and demographic background.

2.2.1. Substance dependence symptoms. Recent drug use was ascertained by asking participants, for each substance they had ever used, how long it had been since they last used it. Participants who indicated they had last used alcohol, marijuana, cocaine, heroin, or prescription drugs (tranquilizers, sedatives, or prescription pain relievers) within the past year were asked questions about dependence symptoms related to the use of these substances. These items were adapted from the National Household Survey on Drug Abuse (NHSDA), and reflected DSM-IV (American Psychiatric Association, 1994) criteria of drug dependence, and included (1) spending a great deal of time in substance-related activities, (2) using much more often or in larger amounts than intended, (3) needing a larger amount to get the same effect (i.e. developing a tolerance), (4) experiencing impairment in meeting social obligations or engaging in recreational activities due to substance use, (5) experiencing emotional or psychological problems due to substance use, (6) experiencing physical health problems caused or exacerbated by substance use, and (7) wanting to cut down on use but being unable to. To be consistent with DSM-IV criteria, items 5 and 6 were combined to represent one symptom, resulting in six symptoms for each substance. DSM-IV criteria also include withdrawal symptoms, which were not assessed.

Following the example of Cochran et al. (2004), a measure of "dependence syndrome" was created for each substance by counting the number of symptoms endorsed. Endorsement of three or more symptoms indicated the presence of dependence syndrome. DSM-IV criteria for substance dependence require three or more of seven symptoms (including withdrawal). Thus, respondents who endorsed three or more symptoms would be likely to qualify as dependent on a substance.

2.2.2. Sexual risk behavior. Questions pertaining to risky sexual activity included (1) the total number of male sex partners in the past six months, (2) the number of times having sex with "a 'casual partner' or someone you had sex with only once", (3) the number of times having receptive anal intercourse with a male partner, (4) the percentage of times having receptive anal intercourse without a condom, (5) the number of times having insertive anal intercourse with a male partner, (6) the percentage of times having insertive anal intercourse without a condom, and (7) having sex in the past six months with a partner who was known to be HIV positive or whose status was not known. Unprotected anal intercourse in itself is not necessarily risky, for example if performed within a monogamous relationship. Since we did not have a direct indicator of unprotected anal sex with risky partners, we constructed a measure from the available information that would reflect a high likelihood

[1] Using formulas recommended by the American Association for Public Opinion Research (American Association for Public Opinion Research, 2006), the response rate is calculated using the formula for response rate #3, defined as the number of completed interviews divided by the eligible sample. The cooperation rate is calculated using formula #1, defined as the number of completed interviews divided by the number of completed interviews plus the number of refusals.

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