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A Lifetime Alcohol or Other Drug Use Disorder and Specific Psychiatric Symptoms Predict Sexual Risk for HIV Infection Among People With Severe Mental Illness

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To clarify the relative contributions of psychiatric and alcohol or other drug (AOD) use disorders on sexual risk for HIV infection among people with severe mental illness, we interviewed 195 psychiatric patients. In the prior 6 months the 100 (51%) sexually active patients had a mean of 3.9 sex partners and 27.5 sex episodes; 49% had known high-risk sex partners; 34% used AOD during sex; 28% traded sex; and 59% never used condoms. The likelihood of being sexually active decreased with age and cognitive symptoms, increased with excited symptoms, and was more than twice as high for African-American patients as others. The likelihood of trading sex increased with cognitive symptoms. The likelihood of having a sexually transmitted disease history (reported by 32% of all patients) increased with depressed/anxious symptoms, a lifetime AOD use diagnosis (obtained for 57% of patients), and was more than twice as high for African-American patients as others. HIV prevention interventions that address specific psychiatric conditions and developmental and cultural issues of psychiatric patients should be developed and tested.

KEY WORDS: HIV risk; psychiatric symptoms; severe mental illness; alcohol or other drug use disorder; sexual behavior.

INTRODUCTION

The strong association between HIV infection and alcohol or other drug (AOD) use is well established. In the United States HIV remains highly concentrated among people who inject drugs, and unprotected sex with an infected drug injector is the likely source of HIV infection in a large proportion of heterosexually transmitted AIDS cases (Neal *et al.*, 1997). AOD use is also thought to contribute to HIV risk by modifying sexual impulses and behavior by increasing sexual desire, disinhibiting sexual behavior, or interfering with the practice of safer sex or all of these (Robertson and Plant, 1988; Stall *et al.*, 1986). AOD use that reaches the threshold of abuse or dependence is thought to increase the likelihood of trading sex to get drugs or money to buy them, and these transactions are unlikely to be protected (Robertson and Plant, 1988).

It is not yet known to what extent similar associations play a part in HIV transmission among people with severe mental illness, for whom the point prevalence of HIV infection varies from 4.0 to 22.9%, with the highest rates found among those with comorbid AOD use disorders (Cournos and McKinnon, 1997b). Rates of AOD use disorders range from 20 to 75% across psychiatric treatment settings such as inpatient units, outpatient clinics, and homeless shelters (Cournos and McKinnon, 1997a). The few studies among these dually-diagnosed patients have examined their risk behaviors but not the relative contributions of psychiatric illness and AOD use disorders

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on sexual risk taking (Hanson *et al.*, 1992; Kim *et al.*, 1992).

A substantial proportion of people with severe mental illness who do not have current AOD use disorders nevertheless report that AOD use is a part of their sexual experience. Among adults with schizophrenia, 45% of sexually active inpatients and outpatients reported using AOD during sex in the past 6 months (Cournos *et al.*, 1994), as did 15–20% of outpatients of all diagnoses within the past year (Kelly *et al.*, 1992). In these studies, rates were comparable for men and women. Among acute-care psychiatric inpatients, almost 40% reported alcohol use during sex at least once during the previous 6 months (Menon and Pomerantz, 1997), and gender differences were found in patterns of co-occurring sex and AOD use: among men, a significant association was observed between using crack during sex and both inconsistent condom use and sex with a high-risk partner; among women, alcohol use before or during sex was significantly associated with engaging in anal sex. Trading sex to get drugs or money to buy drugs appears to be a common practice in certain segments of the psychiatric population. Sex trading within the past year was reported by 50% of sexually active patients with schizophrenia (Cournos *et al.*, 1994), 47% of sexually active homeless men receiving psychiatric treatment in a shelter (Susser and Valencia, 1993), and 13% of outpatients with severe mental illness (Kelly *et al.*, 1992). Men and women in this population appear to differ in their trading activities, men trading drugs for sex, and women trading sex for drugs (Kalichman *et al.*, 1994).

Although little is known about the risk profiles of patients' sexual partners, some patients report having partners with AOD-related risk for HIV infection. Sexual intercourse with a partner who was known to inject drugs was reported by 3% of psychiatric outpatients for the previous month (Kelly *et al.*, 1992), 8% of sexually active inpatients and outpatients with schizophrenia for the previous 6 months (Cournos *et al.*, 1994), 12% of homeless men with psychiatric disorders for the previous 6 months (Susser and Valencia, 1993), and 7–13% of psychiatric outpatients for the previous year (Kalichman *et al.*, 1995). Lifetime prevalence of sex with a drug injector was 6% in one study of outpatients (Hellerstein and Prager, 1992), and 8% of male and 9% of female outpatients in another study (Kalichman *et al.*, 1994). Drug-injecting sexual partners may be more typical of women, particularly those with bipolar disorder, than of men, although the evidence for this is inconsistent (Kalichman *et al.*, 1994; Volavka *et al.*, 1991). However, because many patients have sex with partners they do not know well (Kelly *et al.*, 1992), the specific risks of partners often are not determined.

To date no study has examined the extent to which psychiatric symptoms, the defining characteristic of this population, and AOD use disorders both contribute to unsafe sexual activity. In a previous study (McKinnon *et al.*, 1996), we found that excited symptoms, positive symptoms, and a diagnosis of schizophrenia were predictive of specific types of sexual risk-taking; however, we did not examine the role of comorbid AOD use disorders in these sexual risk behaviors, and recent reports (McKinnon and Cournos, 1998) show that noninjected drug use is associated with HIV infection among people with severe mental illness, suggesting a link with sexual behavior. Prescribed psychotropic drugs also may affect sexual behavior; many have side effects that impinge on sexual functioning (Clayton and Shen, 1998). Previous studies of sexual risk in the psychiatric population have not considered such side effects in sexual risk taking.

In the present study we sought to clarify the relative contributions of psychiatric and AOD use disorders on sexual risk for HIV infection among psychiatric inpatients and outpatients. We wanted to learn whether specific psychiatric symptom clusters, level of functioning, sexual side effects of psychiatric medication, or comorbid AOD use disorders predicted seven sexual behaviors in the prior 6 months: having sex with a partner, having multiple sex episodes, having multiple sex partners, having a high-risk sex partner, using AOD during sex, trading sex, or using condoms inconsistently. We also wanted to learn whether any of these factors increased the likelihood of having had a sexually transmitted disease (STD) at any time in the past as a proxy for unprotected sexual behavior. We expected the likelihood of sexual risk behavior and the likelihood of having an STD history to increase in the presence of an AOD use disorder, more severe psychopathology, and a lower level of functioning, and to decrease with sexual side effects of psychiatric medications.

METHODS

We conducted face-to-face interviews with 200 inpatients and outpatients who were receiving psychiatric treatment in state-operated public mental health programs in New York City. Interviews were

completed in the early 1990s, the same period during which New York City seroprevalence data were collected which show an association between HIV seropositivity and comorbid drug abuse among psychiatric patients (McKinnon and Cournos, 1998). People with a primary AOD use diagnosis or central nervous system dysfunction due to a general medical condition were excluded by administrative mandate from admission to the treatment sites.

We asked all patients between the ages of 18 and 59 years who were evaluated by their primary clinician as being capable of consenting to research and of completing an interview primarily in English to participate in the study. After fully explaining all study procedures, we obtained written informed consent from patients; those who completed the assessment battery were paid $15 for their participation.

All interviews were conducted in English by trained bilingual researchers who translated as necessary when a patient's primary language was Spanish. We obtained an Axis I psychiatric diagnosis including lifetime substance abuse or dependence disorders using the Structured Clinical Interview for *DSM-III-R* (SCID; Spitzer *et al.*, 1990). The SCID does not assess route of drug administration. We also used the SCID to obtain a Global Assessment of Functioning (GAF) score (range: 0 = persistent danger to self or others to 90 = absent or minimal symptoms). The interview battery also consisted of the Positive and Negative Syndrome Scale (PANSS) (Kay *et al.*, 1990), which measures severity of 30 psychiatric symptoms (each on a scale from 1 = absent to 7 = extreme); the Sexual Risk Behavior Assessment Schedule (SERBAS; Meyer-Bahlburg *et al.*, 1990), an extensive interview with demonstrated reliability among psychiatric inpatients and outpatients (McKinnon *et al.*, 1993); an interview which assesses sexual side effects of psychiatric medications (Horwath *et al.*, 1990a); and a sexually transmitted disease interview (Horwath *et al.*, 1990b) that elicits both diagnostic and symptom histories for the past 6 months and lifetime (excluding the past 6 months).

We sought to develop a prediction model using multiple logistic regression analysis. The categorical independent variable "ethnicity" was dichotomized as African-American versus non-African-American because a previous study at the same treatment sites (Cournos *et al.*, 1991) found disproportionately elevated HIV infection rates among African-American patients. Psychiatric symptoms were scored using the reliable and valid five-factor classification (Bell *et al.*, 1994; Lindenmayer *et al.*, 1994; Lindenmayer *et al.*, 1995) of the PANSS: cognitive symptoms (conceptual disorganization, difficulty with abstract thinking, disorientation, poor attention, mannerisms/posturing; score range: 5–35); positive symptoms (delusions, unusual thought content, grandiosity, suspiciousness/persecution; range: 4–28); negative symptoms (emotional withdrawal, passive/apathetic withdrawal, lack of spontaneous conversation, poor rapport, blunted affect, active social avoidance; range: 6–42); excited symptoms (excitement, poor impulse control, hostility, tension; range: 4–28); or depressed/anxious symptoms (anxiety, guilt feelings, depression, somatic concerns, preoccupation; range: 5–35).

The dependent variables sexual activity with a partner, high-risk sex partners, AOD use during sex, sex trading, condom use, and having an STD history were dichotomized as any versus none; number of sex episodes and number of sex partners were not transformed. Chi square and Pearson correlation tests were performed; independent variables significantly associated with dependent variables were included in the regression equation for that dependent variable (Hosmer and Lemeshow, 1989). Adjusted odd ratios (ORs) and 95% confidence intervals (CIs) were calculated to estimate relative risk of each of these behaviors (Fleiss, 1981), controlling for the effects of all others entered into the regression equation.

RESULTS

Descriptors

Sample Characteristics

We obtained written informed consent from 203 (76.9%) of 264 eligible patients. Of these, three patients dropped out before any interview, leaving 200 completed interviews. Interviewers rated the sexual risk behavior responses of four patients as unreliable because of severe cognitive deficits, impaired memory, or borderline IQ, and excluded those of one other patient whose primary language was neither English nor Spanish who did not understand the questions. We excluded from statistical analysis all data from these five patients, resulting in a total sample of 195 patients.

Following institutional review board confidentiality protocols, we collected limited demographic and clinical data from the medical records of all patients eligible for the study to compare participants and nonparticipants. Patients who did not consent to

participate in the study were not significantly different from participants in gender or number of previous psychiatric hospitalizations. The mean ± *SD* age of nonparticipants was 39.72 ± 11.16 years, which was significantly older than that of participants (36.38 ± 9.05; $t = 2.15$, $df = 95.25$, $p = .03$).

Participant Characteristics

Gender and ethnic distributions were representative of the units from which patients were recruited: men comprised 64% of the sample, and approximately one-third of each were African-American, Latino, and white/other.

Psychiatric Characteristics of Participants

More than one-third (38.9%) of participants were outpatients, 33.8% were from a unit that prepares patients for discharge into the community, and 27.1% were from inpatient units. No significant differences in number of previous psychiatric hospitalizations, GAF scores, or psychiatric diagnosis were found between these patient groups which we combined.

The most prevalent primary SCID diagnosis was schizophrenia (49.4%), followed by other psychoses (29.2%), bipolar disorder (11.8%), major depression (7.3%), and other Axis I disorders (2.3%). Most patients (77.0%) had multiple previous psychiatric hospitalizations; only 15 (7.5%) had none. The median GAF score was 40 (range: 1–70), indicating substantial impairment in reality testing, communication, thinking, or mood. A lifetime AOD use disorder was obtained for 56.8% of the sample.

Median PANSS scores for symptom clusters were lowest for positive (6, range: 3–21), excited (5, range: 4–15), and depressed/anxious (7, range: 4–20) symptoms and higher for cognitive (11, range: 4–23) and negative (14, range: 6–29). These scores are consistent with schizophrenia-spectrum diagnoses, which were predominant, and chronic psychiatric illness currently stabilized.

Sexual Risk Characteristics of Participants

The 100 patients (51.3% of the sample) who were sexually active with a partner in the previous 6 months had a mean ± *SD* of 3.9 ± 1.47 sex partners and 27.5 ± 5.19 sex episodes; 48.5% had known high-risk sex partners; 33.7% used AOD during sex; 28.3% traded sex; and 58.5% never used condoms. A majority (67.2%) of all patients reported a history of sexual side effects of psychiatric medications and 32% reported a history of STDs.

Factors Associated With Sexual Risk Behavior

Demographic Characteristics

Age was significantly negatively correlated with being sexually active ($r = -.273$, $p = .000$). Gender was significantly associated with having a high-risk sex partner ($\chi^2 = 6.30$, $df = 1$, $p = .01$), with 12 (66.7%) of 28 women reporting this risk compared with six (33.3%) of 53 men. African-American ethnicity was significantly associated with being sexually active ($\chi^2 = 4.07$, $df = 1$, $p = .04$) and with having an STD history ($\chi^2 = 4.18$, $df = 1$, $p = .04$).

Psychiatric Characteristics

Cognitive symptoms were significantly negatively correlated with being sexually active ($r = -.235$, $p = .001$) and positively correlated with trading sex ($r = .302$, $p = .003$). Negative symptoms were significantly negatively correlated with being sexually active ($r = -.196$, $p = .008$) and positively correlated with number of sex partners ($r = .171$, $p = .021$) and trading sex ($r = .225$, $p = .029$). Excited symptoms were significantly positively correlated with being sexually active ($r = .185$, $p = .012$) and number of sex episodes ($r = .200$, $p = .007$). Depressed/anxious symptoms were significantly positively correlated with an STD history ($r = .156$, $p = .04$). A lifetime AOD use disorder was significantly associated with an STD history ($\chi^2 = 6.62$, $df = 1$, $p = .01$). No association was found between psychiatric diagnosis, GAF score, positive symptoms, or self-reported sexual side effects of psychotropic medications and any of the risk behaviors we measured.

Condom use was not associated with any of the demographic or psychiatric factors we examined in this study.

Predictors of Sexual Risk Behavior

To estimate the relative risk of a specific HIV-related sexual behavior, we controlled simultaneously for the effects of all associated factors to obtain adjusted odd ratios which are shown in Table I. Logistic models are presented only for the three

Table I. Predictors of HIV Risk Activity Among 195 Psychiatric Patients

	Sexually active with a partner		Sex trading[a]		STD history	
Factor	Adjusted *OR* (95% CI)	*p*	Adjusted *OR* (95% CI)	*p*	Adjusted *OR* (95% CI)	*p*
Age[b]	1.06 (1.02–1.10)	.004	—		—	
Gender[c]	1.35 (0.65–1.03)	.42	1.11 (0.37–3.36)	.84	1.48 (0.61–3.64)	.39
Ethnicity[d]	2.36 (1.18–4.73)	.02	—		2.61 (1.14–5.98)	.02
Cognitive symptoms	1.10 (1.01–1.20)[e]	.02	1.18 (1.03–1.35)[f]	.02	—	
Negative symptoms	1.04 (0.97–1.10)[e]	.26	1.29 (0.12–13.49)[f]	.83	—	
Excited symptoms	1.18 (1.03–1.34)[f]	.02	—		—	
Depressed/Anxious symptoms	—		—		1.17 (1.04–1.31)[f]	.007
AOD use disorder	—		—		3.21 (1.30–7.92)	.01

[a] Sexually active patients only.
[b] Younger age increased the likelihood of being sexually active.
[c] Female patients were more likely than male patients to have cognitive and depressed/anxious symptoms and a lifetime AOD use disorder whereas male patients were more likely than female patients to have negative symptoms.
[d] African-American patients were more likely than others to be sexually active and to have an STD history.
[e] Less-severe symptoms increased the likelihood of this behavior.
[f] More-severe symptoms increased the likelihood of this behavior.

dependent variables for which significant predictors were found. Because female gender was significantly associated with cognitive symptoms ($r = -.352$, $p = .000$), negative symptoms ($r = -.285$, $p = .000$), depressed/anxious symptoms ($r = .147$, $p = .047$), and men were significantly more likely than women to have a lifetime AOD use disorder ($\chi^2 = 15.13$, $df = 1$, $p = .000$), we included gender in all regression equations.

Sexual Activity With a Partner

When the simultaneous contribution of age, gender, ethnicity, and cognitive, negative, and excited symptoms was considered, age, cognitive symptoms, and excited symptoms increased the likelihood of being sexually active with a partner by a factor of one and African-American ethnicity increased the likelihood by more than twofold. Neither female gender nor negative symptoms significantly increase the likelihood of having sex with a partner.

Sex Trading

After simultaneously controlling for the independent contributions of gender and cognitive and negative symptoms, only cognitive symptoms significantly increased the likelihood of trading sex by a factor of one.

STD History

After controlling for the simultaneous contribution of gender, ethnicity, depressed/anxious symptoms, and a lifetime AOD use disorder, only gender did not independently increase the likelihood of a reported STD history; an AOD use disorder increased this likelihood by more than threefold; ethnicity by nearly threefold; and depressed/anxious symptoms by a factor of one.

DISCUSSION

We sought to delineate the relative contributions of comorbid psychiatric and AOD use disorders to sexual behaviors associated with HIV infection in a group of people in treatment for severe mental illness. Our findings confirmed several hypotheses about the relationship between specific psychiatric symptoms, AOD use disorders, and HIV risk behaviors in this population.

Although being sexually active is not risky *per se*, we present findings about factors associated with being sexually active because sexual behavior is a necessary condition for sexual risk behavior. Cognitive symptoms appear to have a differential impact upon sexual risk: lower-severity symptoms increased the likelihood of being sexually active, while higher-severity symptoms increased the likelihood of trading sex. One possible explanation for these findings is that more-severe cognitive impairment may reduce the desire or capacity for sexual activity but also interfere with the ability to manage limited resources to the extent that bartering sex for money or a place to stay, also known as "survival sex," suggests itself. It also may be that cognitive impairment increases vulnerability to subtle or overt coercion. Although cognitive symptoms may be more severe among patients with

acute drug abuse or dependence, in our sample severity of cognitive symptoms was not associated with having a lifetime AOD use disorder.

Higher-severity excited symptoms increased the likelihood of being sexually active and were positively correlated with the total number of sex episodes patients engaged in. This association between excited symptoms and the number of sexual episodes may support clinical assumptions described in the literature implicating poor impulse control in HIV risk taking, although we cannot say whether these contacts took place in the context of monogamous relationships or with partners with HIV risk or infection. If this finding is replicated in future studies that take such contextual factors into account, interventions designed to help patients to reduce impulsivity could be implemented as a harm-reduction strategy.

The depressed/anxious symptom cluster also contributed to increased HIV risk: higher-severity symptoms increased the likelihood of having an STD history. In future studies it will be important to learn the sequence in which these conditions occur and whether treating one reduces the likelihood of the other. It is possible that depression affects self-efficacy to negotiate or practice safer sex or both. This hypothesis would be important to test.

Contrary to previous findings (McKinnon *et al.*, 1996), neither positive symptoms nor psychiatric diagnosis predicted any sexual risk for HIV that we measured. Nor did we find any association between a patient's overall level of functioning (measured by the GAF) or self-reported sexual side effects of patients' prescribed psychiatric medications and HIV risk. Carefully designed studies are needed to understand how particular psychiatric and medication-induced conditions affect sexual functioning and risk taking.

A lifetime history of AOD abuse or dependence increased by threefold the likelihood of having an STD history. This finding may explain, in part, why HIV infection rates are high among people with comorbid AOD use disorders and psychiatric illness who do not have drug injection histories. Even patients without an AOD use disorder may use alcohol or other drugs in ways that increase their risk for exposure to HIV from sexual contacts (McKinnon and Cournos, 1998). A substantial proportion of sexually active patients traded sex for drugs, among other goods. Contrary to expectations, AOD use disorders did not predict having high-risk sex partners.

Several demographic factors predicted sexual HIV risk in our sample. Women were more likely by far than men to have sex partners with known HIV risks, predominantly AOD use. Younger age increased the likelihood of being sexually active. Both being sexually active and having an STD history were more than twice as likely among African-American patients than those of other groups.

In this study, we established an association between lifetime AOD use disorders and a history of sexually transmitted disease. It has been argued that a propensity toward risk taking or sensation seeking may account for the coincidence of sexual and drug use risk behaviors (Kalichman *et al.*, 1996; Leigh and Stall, 1993). This perspective, although valid, may be too narrowly focused on the individual and may not explain our findings among people with severe mental illness for whom environmental factors, including transient living conditions and the existence of sexual and drug-use networks in urban psychiatric treatment settings, may make AIDS prevention or the avoidance of risk behaviors a low priority or difficult to initiate. Research is needed on the impact of specific aspects of psychiatric illness and AOD use patterns on sexual risk behavior (McKinnon *et al.*, 1997) in order to understand whether mental illness directly increases HIV risk or whether sequelae of mental illness (e.g., use of AOD to alleviate psychiatric symptoms) or associated conditions (e.g., poverty due to unemployment, residence in poor, HIV-endemic neighborhoods) contribute to the high infection rates seen in this disadvantaged population.

STUDY LIMITATIONS

Patients we interviewed were receiving psychiatric care in urban, public treatment settings, primarily as outpatients being prepared to return to the community. Although most patients were interviewed during a period of compromised reality testing or other functional impairment, whether they were inpatients or outpatients they were otherwise psychiatrically stabilized and capable of giving informed consent, which may account for the lack of significant differences between patient groups in GAF scores. Most had chronic psychiatric illness, as evidenced by their symptom profile (more-severe negative and cognitive symptoms) and numerous previous psychiatric hospitalizations, most commonly schizophrenia. Future studies that are designed to examine the role of

bipolar disorder in HIV risk taking will need to select samples containing a larger proportion of patients with this diagnosis than we had (12%); excited and depressed/anxious symptoms, which predicted specific sexual risks in our sample, are important components of bipolar disorder and deserve further examination. Psychiatric patients in other treatment settings and people with mental illness who are more acutely ill or not receiving treatment may differ clinically and in their rates and types of sexual risk behavior. The significantly younger mean age of participants in our study compared with non-participants may have led us to overestimate rates of sexual behaviors since sexual activity is more prevalent among the young. Nevertheless, patients in this study may be typical of many psychiatric patients who are sexually active, and our findings are in line with previous sexual risk behavior prevalence studies which show similarly high rates of being sexually active with a partner, having multiple sex partners and occasions, having sex partners with known HIV risks, using AOD during sex, trading sex, and using condoms inconsistently (Carey *et al.*, 1997). Sexual and drug use behaviors may change over time, and our findings reflect behavior patterns reported by patients in the early 1990s which may have undergone important changes in response to media campaigns or even targeted interventions, among other factors. The strength of the data we collected is that they are contemporaneous with the only available seroprevalence data obtained to date from people with severe mental illness and, as such, may suggest relationships to examine in future research. Additional studies, especially longitudinal examinations of psychiatric conditions and HIV risk behaviors linked to serostatus in this population, are needed.

CONCLUSIONS

People with severe mental illness need HIV-prevention interventions to reduce their sexual risk for acquiring or transmitting the virus. The treatment of a psychiatric patient's AOD use disorder in and of itself may be a powerful HIV prevention strategy. However, it would be inappropriate to focus on those with a defined dual diagnosis of mental illness and AOD use disorder since these comorbidities often go undetected (Cournos and McKinnon, 1997b) and since use of AOD can affect risk taking even in the absence of an AOD use disorder. Prevention interventions that teach all patients concrete skills to manage psychiatric states that trigger or sustain HIV risk behaviors may reduce the impact of the epidemic among them. Such interventions that are developmentally and culturally appropriate to patients should be developed and tested.

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