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Prevalence and Correlates of Sexual Activity and HIV-related Risk Behavior among Psychiatric Outpatients

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Abstract

This study investigates the prevalence and correlates of sexual activity and HIV-risk behavior among adults with a mental disorder. Demographic, psychiatric, sexual behavior, and substance use data were available for 1558 outpatients. During the past year, 69% were sexually active and 23% engaged in risky behavior. Risk markers included multiple sexual partners (19%), a sexually transmitted disease (4%), sex trading (3%), injection drug use (1%), and needle sharing (< 1%). Being sexually active and being at risk for HIV infection were associated with alcohol and drug use, psychiatric diagnoses other than schizophrenia, and younger age. Married patients were more likely to be sexually active but less likely to engage in risk behavior. Screening for HIV risk in psychiatric settings can identify patients who may benefit from risk reduction programs.

Elevated HIV seroprevalence rates among persons living with a mental disorder have been well-documented. For example, Ayuso-Mateos et al. (1997) reported that 20 of 390 psychiatric inpatients (5.1%) tested positive for HIV. Comprehensive reviews of the published literature indicate that seroprevalence rates among the psychiatric patients have ranged from 4% to 23% (Carey, Weinhardt, & Carey, 1995; Courmos & McKinnon, 1997). The HIV infection rates far exceed the 0.3% rate estimated for the general population (McQuillan, Khare, Karon, Schable, & Vlahov, 1997), and suggest a high prevalence of risk behavior among psychiatric patients.

Research to determine the prevalence of HIV-related risk behaviors among psychiatric patients has revealed that one-half to three-quarters of all patients report that they have been sexually active in the last year with approximately one-third reporting multiple sexual partners (Carey, Carey, & Kalichman, 1997). Among those who were sexually active, condom use was inconsistent. As many as one-third of all patients also reported a history of injection drug use. Overall, the data indicate that the severely mentally ill engage regularly in practices known to involve increased risk for HIV transmission.

Confidence in the representativeness of data from these risk behavior studies is reduced, however, by limitations such as the use of small convenience samples or by the fact that many of the larger studies have been completed in New York City, an AIDS epicenter that is not representative of most US cities (Centers for Disease Control and Prevention, 1997). Confidence in the inferences drawn from these data are also limited because of the tendency to rely upon univariate analyses, which did not adjust for relationships among predictor variables.

We recently reported the results of a study that sought to overcome the limitations of prior research (Carey et al., 1999). Hospital records at a public psychiatric hospital were reviewed to obtain data from 889 outpatients, including demographic, psychiatric, sexual behavior, and

substance use data. Of these patients, 49% were sexually active, 52% used alcohol, and 18% used street drugs during the past year. Eleven percent were at high risk for HIV infection with 7% reporting multiple sexual partners, 3% an STD, and 3% sex trading in the past year. Exploratory multivariate modeling indicated that HIV-related risk behavior was more likely for patients with the following characteristics: single male, from a minority racial status, diagnosed with a disorder other than schizophrenia, and having a history of binge drinking or drug use.

The purpose of the present study was to replicate and extend our earlier study in a second hospital that served patients with a wider range of psychiatric disorders. On the basis of earlier research (Carey et al., 1999), we tested hypotheses that sexual activity status and HIV-related risk behavior increase as a function of younger age, male gender, less severe psychiatric disorder, and concurrent substance use using logistic regression analyses.

Methods

This study relied upon archival data available from medical records from two outpatient clinics providing community mental health services at a private, not-for-profit hospital in Syracuse, NY. With the approval of the hospital Institutional Review Board, data were collected from medical records for outpatients aged 18 or older who were listed on the hospital census from March 1998 through April 2000 ($N = 1630$). All patients had participated in a brief structured screening at the time of intake (for new admissions), or at the time of a therapy appointment or medication visit (for continuing patients). The screen, which was initiated as a standard part of clinical care at the hospital clinics, involved a structured interview that began with four items regarding general health information (i.e., caffeine use, smoking, exercise) and progressed to substance use and sexual behavior items.

Information regarding alcohol use was obtained from the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993). The AUDIT is a widely-used 10-item screening measure designed to identify drinkers at risk for alcohol abuse or dependence. AUDIT scores range from 0-40, and have been shown to be internally consistent ($\alpha = 0.83$; Hays, Merz, & Nicholas, 1995). AUDIT scores correlate ($r_s = 0.62 - 0.88$) with other widely used screening tests (Hays et al., 1995) and with biochemical measures of drinking (Bohn, Babor, & Kranzler, 1995). When the AUDIT is used in psychiatric settings, a score of > 7 identifies persons at high risk for alcohol abuse with a high level of sensitivity and specificity (Maisto, Carey, Carey, Gordon, & Gleason, 2000).

Information regarding non-medicinal drug use was obtained from the short Drug Abuse Screening Test (DAST-10; Skinner, 1982a), a short version of the 28-item DAST. Both measures are designed to quantify the degree of drug-related problems experienced in the previous year (Skinner, 1982b). A single summary score reflects the number of drug abuse items endorsed. Research indicates that the DAST-10 is internally consistent ($\alpha = .86$), temporally stable ($ICC = .71$), and able to discriminate between psychiatric outpatients with and without current drug abuse/dependence diagnoses (Cocco & Carey, 1998). Sensitivity and specificity with this population are optimized with a score > 2 (Maisto et al., 2000).

Information regarding HIV-risk behavior was derived from responses to 5 screening items. For the past year, participants reported the number of sexual partners; history of one or more sexually transmitted diseases (STDs); and the number of occasions they had traded sex, engaged in injection drug use (IDU), and shared needles. All items have been used previously with this population (Carey et al., 1999) and yielded two HIV-relevant measures. First, given the prevalence of HIV infection, the transient relationships, and the low rates of condom use in this population (Carey et al., 1997), we were interested to know whether patients had engaged

in any penetrative sexual activity (“Sexually Active”). Second, we were interested in whether patients had engaged in behaviors known to confer elevated risk for HIV (“Elevated Risk”). A patient was considered to be at “high risk” for HIV if she or he reported one or more of the following: 2 or more sexual partners; an STD; sex trading; IDU; or needle-sharing.

Psychiatric diagnosis was also available from intake interviews conducted by hospital staff. Diagnoses were based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994). A subset ($n = 144$) of the patients included in the current study subsequently participated in a randomized clinical trial during which Structured Clinical Interviews for the DSM-IV (SCIDs; First, Spitzer, Gibbon, & Williams, 1995) were completed. Comparison of the SCID diagnoses with the intake diagnoses used in this study showed good consistency (Cramer's $V = .74$).

Data management and analyses involved several steps. First, all data were double-entered into Stata™ and compared to enhance data accuracy. Second, we calculated the prevalence of sexual activity and HIV-related risk behaviors. Third, we used two separate multivariate logistic regression analyses to identify correlates of (a) sexual activity and (b) elevated HIV-risk status using predictors suggested by exploratory analyses in previous research (Carey et al., 1999). The logistic regression for sexual activity status contrasted patients who reported any penetrative sexual behavior in the past year to patients who reported no sexual behavior. The logistic regression for HIV-related risk compared patients who engaged in one or more HIV risk behaviors to all other patients. For each of these two logistic regression analyses, the predictor variables were entered simultaneously into the model so that the relation of the predictor to the criterion are reported with the other predictors controlled. For these analyses, adjusted odds ratios are reported to characterize the relative strength of the association between each predictor variable and the respective outcome.

Results

Complete chart and screening data were available from 1558 of 1630 (96%) outpatients. More than half (60%) were female, and the mean age was 37 years. The majority of patients (80%) were European-American, with 12% African-American, and 9% Other (3% Hispanic-American, 2% Native-American, 1% Asian-American, and 3% not identifying with any racial/ethnic group). The majority of patients (56%) were never married; 29% were separated or divorced, and 16% were married. Psychiatric diagnoses included 37% Major Depression, 19% Schizophrenia or Schizoaffective Disorder, 16% Adjustment Disorder, 10% Bipolar Disorder, 10% Anxiety Disorder, and 8% Other.

Prevalence rates of sexual activity and HIV-related risk behaviors

Approximately 69% of all patients ($n = 1072$) reported that they had been Sexually Active in the past year whereas 23% of the screened patients ($n = 354$) could be classified as Elevated Risk for HIV. The most common risk behavior involved having multiple sexual partners (19%); additional sexual risk markers included diagnosis with an STD (4%) and trading sex (3%). Injection drug use (1%) and sharing injection equipment (< 1%) were less frequent. Of the 354 patients at Elevated Risk, 83% reported a single risk factor, 15% reported two risk factors, and 2% reported three risk factors.

Correlates of sexual activity and elevated risk

The criterion for the first logistic regression was sexual activity status; thus, the sample was divided into two groups of patients: sexually active ($n = 1072$; 69%) versus sexually inactive ($n = 486$; 31%). Using logistic regression that adjusted for other factors (see Table 1), we found that patients were more likely to be sexually active if they were younger; married; diagnosed

with a mood, anxiety, or other non-psychotic disorder (rather than with a schizophrenic-spectrum disorder); had used tobacco, alcohol, or drugs in the past year; and if they had an AUDIT score > 7 (suggesting high risk for alcohol problems).

The criterion for the second logistic regression was high risk status; for this analysis, the sample was divided into two groups: high HIV-risk ($n = 354$; 23%) versus low HIV-risk ($n = 1204$; 77%). This logistic regression indicated that patients were more likely to be at elevated risk for HIV infection if they were younger; single; diagnosed with a mood, anxiety, or other non-psychotic disorder (rather than with a schizophrenic-spectrum disorder); had used alcohol, or other drugs in the past year; and if they had reported alcohol problems on the AUDIT. Neither gender nor race/ethnicity were associated with the risk markers; and DAST scores were not correlated with either risk marker after adjusting for any drug use in the past year.

Discussion

The current study involved the largest sample of adults receiving outpatient psychiatric care to date. We found that 69% had been sexually active in the past year. This prevalence rate is lower than estimates (i.e., 88%) typically reported for the general population (Laumann, Gagnon, Michael, & Michaels, 1994), but it is higher than those reported in psychiatric samples that have a higher percentage of severely mentally ill. For example, in a study with nearly identical methods but with 52% of the participants diagnosed with schizophrenia-spectrum disorder (compared to 19% in the current sample), only one-half of the participants were sexually active (Carey et al., 1999).

Results from the logistic regression on sexual activity status also confirmed a lower rate of sexual activity with increasing psychopathology, as participants diagnosed with a schizophrenia-spectrum disorder were less likely to be sexually active than were participants with major mood, anxiety, or adjustment disorders. Also associated with sexual activity status were younger age, being married, and substance use or abuse. These correlates of sexual activity status replicate those correlates found in a methodologically similar study, with an older and more impaired sample of outpatients attending public psychiatric clinics (Carey et al., 1999).

Evidence of elevated risk for HIV was apparent in 23% of our sample. This level of risk corroborates previous findings obtained with smaller samples, but appears to be lower than rates reported for other populations that are vulnerable to HIV. For example, when we screened 357 low-income urban women from the same community using similar items, 39% were found to be engaging in behaviors that place them at risk for HIV (Carey et al., 2000). However, because the urban women's sample was self-selected, it is difficult to compare these two rates directly. The rate found in the current sample of psychiatric patients does suggest that a sizeable minority of psychiatric patients engage in behavior that places them at risk for infection with HIV and other STDs.

In this sample from a medium-sized city, most risk was associated with sexual (rather than injection drug use) behavior. Risk behavior was greater among younger, single patients with less severe disorders. In addition, patients who reported recent alcohol or drug use, or evidence of alcohol problems, were also more likely to engage in risky sexual behavior. Thus, the analyses showed that the predictors of sexual activity and elevated risk were the same, except for marital status (i.e., married participants were more likely to be sexually active but single participants were more likely to be at elevated risk for HIV infection).

Consistent with previous research (Carey et al., 1999), we found that patients diagnosed with a schizophrenia-spectrum disorder were less likely to be sexually active, and reported lower rates of HIV-related risk behavior. These findings reflect the social and interpersonal

difficulties that typically accompany schizophrenia (Bellack, Mueser, Gingerich, & Agresta, 1997).

The emergence of alcohol and drug use as correlates of risk confirms prior theory and clinical experience (Leigh & Stall, 1993) but interpreting this association is complicated. Research examining alcohol use during sexual encounters among psychiatric outpatients showed that alcohol use was not related to condom use during vaginal or anal intercourse (Weinhardt, Carey, Carey, Maisto, & Gordon, in press); that is, patients who used condoms when sober tended to use them to the same extent when drinking. Other research has shown that psychiatric patients who abuse substances tend to be more socially competent but more clinically unstable than non-substance-abusers (Buckley, Thompson, Way, & Meltzer, 1994; Dixon, Haas, Weiden, Sweeney, & Frances, 1991). Finally, research indicates that a personality variable, sensation seeking, may also explain some of the variance in both risky sex and substance use/abuse (Kalichman, Heckman, & Kelly, 1996). Identification of substance use/abuse as a correlate of risk behavior is noteworthy and, because it does not reflect IDU exclusively (in this sample), warrants increased investigation and clinical attention.

Strengths of this study are the use of a large sample of participants who were not self-selected or therapist-referred and assessment of substance use with measures demonstrated to be psychometrically sound with this population. Conversely, three limitations of this study should be acknowledged. First, we relied upon self-reported data. This method remains the modal way to assess private behavior, and the procedures used to assess risk were informed by prior research (Weinhardt, Forsyth, Carey, Jaworski, & Durant, 1998) to enhance the data's reliability and validity. Second, because this study was a population-wide archival study, we cannot provide a comprehensive portrait of risk behavior or its determinants. It is best to interpret data obtained from screening procedures as providing an "index of suspicion" that risk behavior may be present. Finally, as with any investigation completed at a single site, these results may not be representative of other settings. It is likely that risk rates will be higher in larger cities or in settings where injection drug use is more prevalent.

Prevalence results from this and similar studies provide evidence that psychiatric patients require sexual health services as much as any other segment of the population. Risk modeling analyses can help to indicate characteristics that may be associated with higher risk but should not substitute for careful screening of all patients. Such modeling can be used to guide the collection of additional data and can be used to facilitate the refinement of context-specific, HIV-risk reduction interventions. Indeed, recent research indicates that persons with a mental disorder can profit from HIV risk reduction programs (Kalichman, Sikkema, Kelly, & Bulto, 1995; Susser et al., 1998; Weinhardt, Carey, Carey, & Verdecias, 1998). Continued refinement and dissemination of such programs are strongly encouraged to help to reduce the prevalence of HIV infection among mentally ill persons.

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Table 1Logistic Regression Predicting Sexual Activity and HIV Risk Status in the Past Year ($N = 1558$)

| | Sexually Active ($n = 1072$) vs. Inactive ($n = 486$) | | High Risk ($n = 354$) vs. Low Risk ($n = 1204$) | |
|------------------------------------|---|----------------------|---|----------------------|
| | % ^a | AOR (95% CI) | % ^b | AOR (95% CI) |
| Demographic Variables | | | | |
| Age | | | | |
| 18 – 28 | 80 | 1.00 (Reference) | 34 | 1.00 (Reference) |
| 29 – 37 | 78 | .86 (.59, 1.24) | 29 | .89 (.64, 1.24) |
| 38 – 44 | 69 | .56 (.39, .80)** | 19 | .60 (.42, .85)** |
| 45 + | 49 | .27 (.19, .39)*** | 9 | .35 (.23, .54)*** |
| Gender | | | | |
| Female | 69 | 1.00 (Reference) | 21 | 1.00 (Reference) |
| Male | 69 | .79 (.62, 1.02) | 25 | .90 (.69, 1.17) |
| Ethnicity | | | | |
| White | 67 | 1.00 (Reference) | 21 | 1.00 (Reference) |
| Black | 76 | 1.39 (.94, 2.07) | 33 | 1.43 (.98, 2.07) |
| Other | 73 | 1.15 (.75, 1.75) | 23 | .95 (.61, 1.49) |
| Marital status | | | | |
| Currently not married | 66 | 1.00 (Reference) | 25 | 1.00 (Reference) |
| Married | 84 | 3.74 (2.53, 5.52)*** | 12 | .51 (.33, .78)** |
| Psychiatric Diagnosis | | | | |
| Schizophrenia spectrum | 48 | 1.00 (Reference) | 15 | 1.00 (Reference) |
| Bipolar | 72 | 2.67 (1.65, 4.33)*** | 25 | 1.51 (.87, 2.64) |
| Depression | 73 | 2.81 (1.98, 4.0)*** | 23 | 1.60 (1.03, 2.49)* |
| Other | 72 | 2.41 (1.71, 3.40)*** | 25 | 1.61 (1.04, 2.49)* |
| Substance use variables | | | | |
| Alcohol use, last year | | | | |
| no | 57 | 1.00 (Reference) | 13 | 1.00 (Reference) |
| yes | 75 | 1.41 (1.09, 1.82)* | 29 | 1.49 (1.07, 2.06)* |
| Illicit drug use, last year | | | | |
| no | 63 | 1.00 (Reference) | 15 | 1.00 (Reference) |
| yes | 89 | 2.19 (1.35, 3.55)** | 47 | 2.33 (1.60, 3.37)*** |
| Current Smoker | | | | |
| no | 60 | 1.00 (Reference) | 20 | 1.00 (Reference) |
| yes | 75 | 1.73 (1.35, 2.20)*** | 25 | .94 (.71, 1.23) |
| AUDIT risk classification | | | | |
| low risk (≤ 7) | 64 | 1.00 (Reference) | 18 | 1.00 (Reference) |
| high risk (> 7) | 86 | 1.67 (1.12, 2.49)* | 42 | 1.65 (1.19, 2.29)** |
| DAST risk Classification | | | | |
| low risk (≤ 2) | 66 | 1.00 (Reference) | 18 | 1.00 (Reference) |
| high risk (> 2) | 90 | 1.25 (.66, 2.36) | 51 | 1.42 (.93, 2.18) |

Note: AOR = adjusted odds ratio; CI = confidence interval. All variables listed in the table are included as independent variables in the model.

p < .001.

**
p < .01.

*
p < .05.

^a Percentages indicate the proportion of participants within each stratification reporting sexual activity in the past year.

^b Percentages indicate the proportion of participants within each stratification endorsing elevated HIV-related risk behavior in the past year.