

# HIV risk behavior of psychiatric patients with mental illness: a sample of Brazilian patients

## *Comportamento de risco para o HIV de pacientes psiquiátricos: uma amostra de pacientes brasileiros*

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### Abstract

**Objective:** The prevalence of HIV among psychiatric patients is higher than general population rates worldwide. Many risk behaviors have been identified in studies from both developing and developed countries, though sampling limitations restrict the generalizability of their results. The objective of this study was to report findings from the first national sample of psychiatric patients about lifetime practice of unsafe sex and associated factors. **Method:** A national multicenter sample of adults with mental illness was randomly selected from 26 public mental health institutions throughout Brazil. Sociodemographic, sexual behavior and clinical data were obtained from person-to-person interviews and blood was collected for serology testing. Logistic regression was used for analysis. **Results:** The overall prevalence of lifetime unprotected sex was 80.3%. Married, older, female patients, those with multiple partners and living with children or partners only and those with less severe psychiatric diagnosis more often practised unsafe sex. **Discussion:** Risk behavior assessment is a critical tool for clinicians to be able to determine needed HIV-related services for their clients and ensure appropriate follow-through with care and prevention. Interventions that address situational risks in psychiatric patients' lives—institutional and individual— and increase their ability to make informed decisions about their sexual health are urgently needed.

**Descriptors:** HIV; Mental disorders; Sexual behavior; Developing countries; Multicenter study

### Resumo

**Objetivo:** A prevalência do HIV em pacientes psiquiátricos é maior do que na população geral em diversos países. Diversos comportamentos de risco têm sido identificados em estudos em países desenvolvidos e em desenvolvimento. Entretanto, limitações amostrais restringem a generalização dos resultados em sua grande maioria. O objetivo deste trabalho foi apresentar resultados do primeiro estudo representativo de uma amostra nacional de pacientes psiquiátricos sobre a prática do sexo desprotegido e seus fatores associados. **Método:** Uma amostra representativa de pacientes adultos com transtornos mentais foi aleatoriamente selecionada de instituições públicas de saúde mental no Brasil. Dados sociodemográficos, comportamentais e clínicos foram obtidos por entrevista face-a-face e sangue foi coletado para exames sorológicos. Foi utilizada regressão logística para análise estatística. **Resultados:** A prevalência da prática do sexo desprotegido ao longo da vida foi de 80,3%. Pacientes casados/em união, mais velhos e do sexo feminino, aqueles com múltiplos parceiros e morando somente com filhos ou com parceiros e aqueles com condições psiquiátricas menos graves praticaram o sexo desprotegido mais frequentemente. **Discussão:** A avaliação de comportamentos de risco é um instrumento crítico para que profissionais de saúde sejam capazes de determinar as necessidades de cuidados relacionados ao HIV para seus pacientes garantindo o acesso ao tratamento e prevenção. Intervenções que abordam situações de risco na vida dos pacientes psiquiátricos – institucional ou individual – e que contribuam para sua capacidade de tomar decisões informadas sobre sua saúde sexual são urgentemente necessárias.

**Descritores:** HIV; Transtornos mentais; Comportamento sexual; Países em desenvolvimento; Estudo multicêntrico

### Introduction

The prevalence of the Human Immunodeficiency Virus (HIV) infection among psychiatric patients in developed countries

ranges from 0 to 29.0% and in developing countries from 0 to 23.8% among 24 published studies, and higher infection rates

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in this population relative to the general population are the rule.<sup>1</sup> Most HIV studies of psychiatric patients have focused on people with severe mental illness (SMI), the term used to describe a constellation of diagnoses which includes the major psychiatric disorders such as schizophrenia, schizoaffective disorder, bipolar disorder and major depression with psychotic features.<sup>2</sup> These disorders are characterized by persistent and chronic symptoms and pervasive impairment of function, and typically require periods of hospitalization.<sup>3</sup>

More than 50 HIV risk behavior studies have been conducted in both developing and developed countries, though sampling limitations restrict the generalizability of their results. Current injection drug use (IDU) among people with a primary diagnosis of SMI is uncommon, but over 20.0% of psychiatric patients report a history of IDU, and most who have injected have shared needles.<sup>4</sup> In developed countries, lifetime rates of injection range from 15.0% to 37.0%, with past-year rates from 1.0% to 8.0%.<sup>5</sup> The few studies from developing countries show that IDU varies considerably between samples and regions, with rates ranging from 0%<sup>6</sup> to 23.3%.<sup>7-9</sup>

Reported rates of being sexually active in the recent past are lower in developing countries than the ranges found in developed countries, where between 51.0% and 74.0% of adults with SMI report being sexually active within the past 12 months;<sup>4,10</sup> this rate ranges from 32.0% to 65.0% in the past 3 months.<sup>4,11-13</sup> Among people with SMI, on average, a larger proportion in the U.S. are sexually active compared to studies conducted in Australia, New Zealand, and Italy.<sup>4</sup> In developing countries, a study in Rio de Janeiro, Brazil, found 41.8% of sexually active SMI patients in the past three months<sup>6</sup> while in India 41.0% of psychiatric inpatients were sexually active in the past 2 years.<sup>9</sup>

Sexually active adults with SMI use condoms inconsistently. In developed countries, studies show that between 12.0% and 68.0% of SMI patients reported inconsistent use of condoms in the past 12 months,<sup>4,10,11,14</sup> and 43.0%-78.0% reported having unprotected sex in the past 3 months.<sup>4,13</sup> The only data from developing countries on condom use in the psychiatric population are from Brazil. In Rio de Janeiro, 43.9% of outpatients had not used condoms consistently in the past three months;<sup>6</sup> and in Minas Gerais, 68.2% of the sexually active sample of male inpatients reported never using condoms.<sup>15</sup> Comparisons between samples are difficult given the varying time frames for behavior self-reports, the highly selective nature of the participating patients, and the differences in the psychiatric diagnosis inclusion criteria. Reliability of sexual risk behavior self-reports has been established only in the US and Brazil and only for 3- to 6-month recall periods.<sup>16-18</sup>

Research which spans the past 18 years and several countries clearly demonstrates that individuals with SMI are at risk for HIV infection through both proximal and more remote exposures by virtue of IDU and unprotected sex. HIV testing in this population, however, is not commensurate with demonstrated levels of infection and risk.<sup>5,19</sup> Even if half of the population was

not sexually active in the prior 3 to 6 months, exposure to HIV might nevertheless have occurred prior to that time, and having a reliable lifetime risk behavior assessment would be a critical tool for clinicians to be able to determine needed HIV-related services for their clients and ensure appropriate follow-through with care and prevention interventions.

This study reports findings from the first national sample of psychiatric patients' lifetime risk behavior self-reports; the lifetime prevalence of unprotected sexual risk behavior; and the associations between demographic, clinical, and contextual factors and lifetime sexual risk behavior.

## Method

### 1. Participants

This national cross-sectional multicenter study was conducted in Brazil in 2006 (PESSOAS Project--*HIV Seroprevalence Survey in Mental Health*) among adults with mental illness under the care of public psychiatric hospitals and public mental health outpatient clinics, known as Psychosocial Care Centers (CAPS), previously described.<sup>20</sup> Briefly, our eligibility criteria included adult (18 years old or over) inpatients or outpatients under care either at hospitals or adult CAPS who were capable of providing written informed consent, and able to answer the questionnaire described below. Patients were interviewed, and blood was collected for serology (HIV, hepatitis B and C, and syphilis). The sample size ( $n = 2475$ ) was obtained using a two-stage sampling strategy. In the first stage, the centers within each of the five Brazilian geographical regions were randomly selected proportional to the number of beds for the hospital stratum or the number of registered patients for the CAPS stratum, leading to the selection of eleven hospitals and fifteen CAPS. The second stage was simple random probability sampling of patients from each site.<sup>20</sup>

Because we aimed to obtain a wider representation of adult patients with chronic mental illness, CAPS which exclusively treated substance use disorders as primary diagnoses were excluded from the sampling frame due to the possibility of overestimating selected risk behaviors and/or prevalence rates. Ethical approval was obtained from each treatment site, the Universidade Federal de Minas Gerais Institutional Review Board (UFMG/ETIC 125/03) and the National Ethical Review Board (CONEP 592/2006).

The patients' capacity to participate in and understand the aims of the study was evaluated through a preliminary assessment adapted from the Minimental Status Examination by trained mental health professionals (brief-MMSE).<sup>21</sup> Seven objective questions were asked relevant to orientation [4 questions], memory [2 questions] and attention [1 question]. In addition, the presence of acute psychosis or suicidality was ascertained using a qualitative assessment. A final judgment was based on the combined assessment, and those capable and eligible to participate were asked to sign a written informed consent.

### 2. Exposure and event measurements

We obtained self-reported data from face-to-face interviews conducted by experienced and trained mental health care

professionals using a pre-tested semi-structured questionnaire.<sup>22</sup> Sociodemographic data (e.g. age, gender, skin color, schooling, income), clinical characteristics (e.g. hospitalization history, history of sexually transmitted infections (STI), previous HIV testing, behavioral variables (e.g. sexual practices, alcohol, tobacco and illicit substance use, history of violence), and assessment of HIV/AIDS knowledge and perception of risk for HIV infection were obtained during interviews.

To assess reliability of the interview, a 5% sample of the interviewees was randomly selected for re-interview up to seven days following the first interview. Good to excellent reliability was found for all self-report data included in the present analysis, e.g., previous psychiatric admissions (kappa = 0.94), psychiatric diagnoses (kappa = 0.85), being sexually active (kappa = 0.76), history of HIV testing (kappa = 0.73), homelessness (kappa = 0.72), HIV/STI history (kappa = 0.70), and recent (< six months) and lifetime condom use (kappa = 0.66 and 0.64, respectively).<sup>22,23</sup>

Psychiatric diagnoses were obtained from medical charts and were coded according to the International Classification of Diseases (ICD-10), the standard reference for public psychiatric services in Brazil. When more than one psychiatric diagnosis was present, these were hierarchically grouped according to clinical severity as follows: (1) schizophrenia and other psychotic disorders; (2) bipolar disorder; (3) depression; (4) anxiety; (5) substance use disorder; (6) others. HIV/AIDS knowledge was assessed through ten true or false questions; good HIV/AIDS knowledge was defined as having eight or more right answers in those items while having a score of seven or less was considered poor HIV/AIDS knowledge. These statements have been used in prior studies and were derived from Brazilian population-based studies.<sup>24</sup> Sexual behavior was assessed in two time frames, lifetime and in the past six months and included condom use, types of practices, and number of partners.<sup>22</sup> Condom use was assessed as always, sometimes (more than 50% of the time), rarely (less than 50% of the time) and never. For the current analysis we defined unprotected sex as not always using condoms in all practices during lifetime, i.e., sometimes, rarely or never; safe sex was defined as always using condoms in all practices or never having sex.

### 3. Data analysis

Descriptive analysis was carried out and the chi-square test was performed for the analysis of categorical data. The magnitude of the associations between putative risk factors and unsafe sexual behavior was estimated by the odds ratio (OR) with 95% confidence interval (95% CI). The level of significance was 0.05. The independent effect of potential exposure variables was assessed by multivariate analysis using logistic regression. All variables with p-values equal to or less than 0.20 obtained in the univariate analysis were used to start multivariate modeling. A backward deletion strategy was applied and those variables with p-values equal to or less than 0.05 remained in final model. SAS System<sup>®</sup> was used for data analysis and Paradox<sup>®</sup> Windows for database management.

## Results

### 1. Recruitment

Among the 3,255 recruited patients, 492 (15.1%) were not capable of participating according to the preliminary assessment and 2763 (84.9%) were invited to participate. Among these, 2475 were interviewed (89.6%), and 288 were non-participants (10.4%). Reasons for non-participation were refusals (52.0%), not being located (19.1%), missed appointments (8.0%), non-eligible (3.8%), legally incapable (1.0%), death (0.7%), and other (15.4%). There was no difference between participants and non-participants with regard to schooling ( $p = 0.07$ ), age ( $p = 0.593$ ), gender ( $p = 0.276$ ) or psychiatric diagnosis ( $p = 0.551$ ). However, hospital patients had a higher participation rate as compared to CAPS patients ( $p < 0.01$ ). Eighty-one percent of the centers ( $n = 21$ ) were public institutions while the remainder were private with partial public funding; a detailed description of the institutions was previously reported.<sup>25</sup>

### 2. Descriptive characteristics

Sixty-four percent of the participants were under treatment at CAPS while the remaining 36.0% were under the care of psychiatric hospitals, consistent with the sampling strategy. Most participants were female (51.6%), older than 40 years of age (54.6%), black or mulatto (48.5%), and 33.2% were married or in a long-term/stable unions (Table 1). Half of the sample had less than five years of schooling, 17.9% were not able to read or write, and for 35% of participants, family monthly income was lower than the Brazilian minimum wage (US\$200). Approximately 15.0% of participants were living only with either their children or partners, while 11.2% reported living completely alone and 8.3% reported living in the hospital; 18.0% had a history of homelessness.

Schizophrenia-spectrum diagnoses and bipolar disorder were the most common diagnoses (56.7%) followed by depression (12.9%), substance use disorder (7.0%), and anxiety disorder (3.6%). Other diagnoses not classified in the above categories included: epilepsy, personality disorders, dementias, and under investigation. Previous psychiatric hospitalization was reported by a large proportion of patients (58.2%). Twenty-seven percent of participants had a history of STI, and more than one quarter had been previously tested for HIV.

A large proportion had been sexually active at some point during their lifetime (87.7%) or during the past six months (61.3%) with a very low proportion always using condoms: 8.3% lifetime and 16.3% past six months. Overall lifetime unprotected sex was reported by 80.3%, 61.0% had multiple sexual partners (> 1), and 12.3% and 17.4% received or offered money for sex, respectively. High proportions of lifetime occurrences of verbal, physical or sexual violence were reported - 68.9%, 58.0% and 19.9%, respectively, and a history of incarceration was reported by 25.7%. Substance use was less common, with 25.1% reporting any use of illicit drugs and 2.9% of injected drugs. However, there was a high proportion of patients with a lifetime history of cigarette smoking (71.5%) or alcohol use (64.4%), while 7.9%

**Table 1 - Descriptive characteristics among the 2475 participants. PESSOAS Project, Brazil, 2006 (cont'd)**

Characteristics	Total n (%) <sup>*</sup>
<b>SOCIODEMOGRAPHIC</b>	
<b>1. Type of recruitment center</b>	
Hospital	898 (36.3)
CAPS	1577 (63.7)
<b>2. Gender (Female)</b>	
	1277 (51.6)
<b>3. Age (≥ 40 years old)</b>	
	1351 (54.6)
<b>4. Skin color (black/mulatto)</b>	
	1200 (48.5)
<b>5. Marital status (married or in union)</b>	
	821 (33.2)
<b>6. Know how to read/write</b>	
	2032 (82.1)
<b>7. Schooling (&lt; 5 years)</b>	
	1253 (50.6)
<b>8. Family income in the last month (&lt; 1 MW)**</b>	
	827 (35.2)
<b>9. Current housing partnership</b>	
Living with others	1629 (65.8)
Living alone with children or partners only	359 (14.5)
Living in the hospitals	206 ( 8.3)
Living alone	278 (11.2)
<b>10. History of homelessness</b>	
	444 (18.0)
<b>CLINICAL</b>	
<b>11. Previous hospitalization</b>	
	1434 (58.2)
<b>12. Psychiatric diagnosis (ICD-10)</b>	
Anxiety	89 (3.6)
Depression	318 (12.9)
Substance use	173 (7.0)
Psychoses and Bipolar Disorder	1403 (56.7)
Others	492 (19.9)
<b>13. History of STI***</b>	
	568 (23.3)
<b>14. Previous HIV testing</b>	
	668 (27.0)
<b>BEHAVIORAL</b>	
<b>15. Age of first sexual intercourse (&lt; 18 years old)</b>	
	1193 (57.4)
<b>16. Lifetime sexually active</b>	
	2172 (87.8)
<b>17. Sexually active in the past six months</b>	
	1517 (61.3)
<b>18. Always used condoms (lifetime)<sup>†</sup></b>	
	179 (8.2)
<b>19. Always used condoms (past six months)<sup>†</sup></b>	
	245 (16.1)
<b>20. Lifetime unprotected sex<sup>††</sup></b>	
	1970 (80.3)
<b>21. Received money for sex</b>	
	301 (12.3)
<b>22. Offered money for sex</b>	
	428 (17.4)
<b>23. Multiple sexual partners ever (&gt; 1)</b>	
	1523 (61.5)
<b>24. Lifetime physical violence</b>	
	1431 (58.0)
<b>25. Lifetime sexual violence</b>	
	488 (19.9)
<b>26. Lifetime verbal violence</b>	
	1700 (68.9)
<b>27. Lifetime incarceration</b>	
	637 (25.7)
<b>28. Lifetime illicit drug use</b>	
	621 (25.1)
<b>29. Lifetime injection drug use</b>	
	72 (2.9)
<b>30. Lifetime cigarette smoking</b>	
	1762 (71.5)
<b>31. Lifetime alcohol use</b>	
	1594 (64.4)
<b>32. Sex under the influence of drugs</b>	
	192 (7.9)
<b>33. Sex under the influence of alcohol</b>	
	606 (24.8)
<b>34. Good HIV/AIDS knowledge</b>	
	1354 (55.3)
<b>35. HIV risk self perception (high/some risk)</b>	
	957 (40.8)

\* Number and proportion of all participants enrolled at the study in each variable category

\*\* Minimum wage = US\$200

\*\*\* Sexually transmitted infections

<sup>†</sup> Among those sexually active

<sup>††</sup> Among all participants and excluding missing values (n = 23). Unprotected = sometimes, rarely or never used.

had had sex under the influence of drugs and 24.8% under the influence of alcohol. Finally, 55.3% of the participants showed good HIV/AIDS knowledge and 40.8% perceived themselves as being at high or some risk for HIV/AIDS.

### 3. Univariate and multivariate analysis of lifetime unprotected sex

The overall prevalence of lifetime unprotected sex in this population was almost two times higher for women compared to men, for those over 39 years old, and for those with relatively lower education and income ( $p < 0.05$ ) - Table 2. The odds of lifetime unprotected sex were more than seven-fold higher among those who were married or in a stable union compared to others, and five-fold higher among those living only with either children or partners, while patients currently living in the hospitals showed a lower proportion of unprotected sex as compared to those currently living in the community. Compared to patients with severe psychiatric diagnoses (Schizophrenia-spectrum diagnoses or bipolar disorder), the odds of lifetime unsafe sex were higher among patients with anxiety by four-fold, with depression by more than three-fold, and with substance use disorder by three-fold. The odds of lifetime unsafe sex were higher among those with a history of STI by almost four-fold and with a history of HIV testing by two-fold.

Several risk behavior characteristics were strongly associated with unprotected sex in the univariate analysis including sex under the influence of alcohol or drugs, receiving or offering money for sex, and lifetime history of illicit drug or injection drug use. In addition, those reporting lifetime cigarette smoking or alcohol use were more than two times as likely to practice unprotected sex. Of note is the very strong association between having had multiple sex partners and unsafe sex. Moreover, patients with a history of physical, sexual or verbal violence and those with past incarceration were also more likely to practice unsafe sex. Lastly, a lower prevalence of lifetime unsafe sex was found among those with poorer HIV/AIDS knowledge despite the increased risk of unsafe sex found when patients perceived themselves as being at high or some risk for HIV/AIDS.

After adjustment for potential confounding factors, the multivariate analysis indicated nine variables which were independently associated with lifetime unprotected sexual behavior (Table 3): women, those older than age 40, those who were married or in a stable union, a history of STI, sex under the influence of alcohol, lifetime cigarette smoking, and having multiple partners. In addition, living only with children or partners showed an increased risk, while living in hospitals showed a negative association with unsafe sex. Further, patients diagnosed with anxiety or depression showed higher lifetime unsafe sex prevalence as compared to those with more severe diagnoses (schizophrenia spectrum diagnoses and bipolar disorders).

### Discussion

This is the first study of lifetime risk behaviors in a national sample of psychiatric patients in public mental health care in Brazil or elsewhere. It is also the first to demonstrate that self-reported

Table 2 – Univariate analysis of lifetime unprotected sex\*, PESSOAS Project, Brazil, 2006 (cont'd) – PART I

Characteristics	Total	Unprotected sex**	Odds Ratio	(95% CI)	p-value
<b>SOCIODEMOGRAPHIC</b>					
<b>1. Type of recruitment center</b>					
Hospital	889	708 (79.6)	0.93	(0.76-1.15)	0.509
CAPS	1563	1262 (80.7)	1.00		
<b>2. Gender</b>					
Female	1263	1056 (83.6)	1.53	(1.26-1.88)	< 0.001
Male	1189	914 (76.9)	1.00		
<b>3. Age (years old)</b>					
> 40	1339	1134 (84.7)	1.83	(1.50-2.24)	< 0.001
18-39	1113	836 (75.1)	1.00		
<b>4. Skin color</b>					
White	1262	1011 (80.1)	0.97	(0.79-1.18)	0.766
Black/mulatto	1190	959 (80.6)	1.00		
<b>5. Marital status</b>					
Married or in union	815	776 (95.2)	7.38	(5.26- 10.37)	< 0.001
Single, divorced or widowed	1637	1194 (72.9)	1.00		
<b>6. Know how to read/write</b>					
Yes	2013	1656 (82.3)	1.85	(1.46-2.34)	< 0.001
No	439	314 (71.5)	1.00		
<b>7. Schooling (years)</b>					
< 5	1245	1005 (80.7)	1.05	(0.86-1.28)	0.630
≥ 5	1207	965 (80.0)	1.00		
<b>8. Family income in the last month</b>					
≥ 1 MW***	1516	1275 (84.1)	1.75	(1.42-2.16)	< 0.001
< 1 MW	816	613 (75.1)	1.00		
<b>9. Current housing partnership</b>					
Living with others	1614	1268 (78.6)	0.76	(0.54-1.06)	0.102
Living with children or partners only	358	344 (96.1)	5.06	(2.73-9.41)	< 0.001
Living in hospitals	202	127 (62.9)	0.35	(0.23-0.53)	< 0.001
Living alone	275	228 (82.9)	1.00		
<b>10. Lifetime homelessness</b>					
Yes	441	368 (83.5)	1.29	(0.98-1.69)	0.070
No	2011	1602 (79.7)	1.00		

\* Not always using condoms in all practices during lifetime, i.e., sometimes, rarely or never.

\*\* Prevalence of unprotected sex for each category.

\*\*\* Minimum wage = US\$200.

† Sexually transmitted infections.

more recent behavior, which may reflect short-term situational factors or psychiatric or psychosocial instability, lifetime behavior can more adequately offer potential causal associations between specific patient-level factors and unsafe sex behavior that confers increased risk for sexually transmitted infections, including HIV.

This study demonstrates that psychiatric patients are sexually active at rates similar to the overall adult population in Brazil (87.8-92.7%).<sup>26</sup> However it also indicates a high prevalence of sexual risk behavior and that specific contextual factors related to being in care for a psychiatric condition are differentially associated with lifetime risk behaviors among people receiving treatment in public psychiatric institutions in Brazil. In addition, psychiatric patients in public mental health care have higher risk behavior rates in comparison to the adult Brazilian population. Only 24.0% of

among those sexually active, only 16.0% and 8.0% always used them in the last six months or ever, respectively. Recent data from a national sexual behavior study among adults in Brazil indicate higher rates of condom use (35.1% in the last intercourse and 20.6% in all sexual encounters in the last year).<sup>27</sup> In addition, use of psychoactive drugs was higher among our sample as compared to the national sample (25.1% and 8.9%, respectively),<sup>28</sup> despite the fact that the level of knowledge regarding HIV/AIDS was similar (55.3% and 57.2%, respectively).<sup>29</sup> However, interpretation of data obtained from surveys with diverse sampling populations should be made with caution. The finding that those with poorer HIV/AIDS knowledge had a lower prevalence of lifetime unsafe sex than those with better knowledge may seem counter-intuitive, but prior research found a similar pattern for sexual risk in the

Table 2 – Univariate analysis of lifetime unprotected sex\*, PESSOAS Project, Brazil, 2006 (cont'd) – PART II

Characteristics	Total	Unprotected sex**	Odds Ratio	(95% CI)	p-value
<b>CLINICAL</b>					
<b>11. Previous psychiatric hospitalization</b>					
Yes	1417	1123 (79.3)	0.85	(0.70-1.05)	0.125
No	1025	838 (81.8)	1.00		
<b>12. Psychiatric diagnosis</b>					
Anxiety	88	82 (93.2)	4.00	(1.73-9.26)	< 0.001
Depression	317	292 (92.1)	3.42	(2.23-5.25)	< 0.001
Substance use	173	158 (91.3)	3.09	(1.79-5.32)	< 0.001
Others	484	363 (75.0)	0.88	(0.69-1.20)	0.296
Psychoses and bipolar disorder	1390	1075 (77.3)	1.00		
<b>13. History of STI†</b>					
Yes	565	523 (92.6)	3.79	(2.72-5.29)	< 0.001
No	1854	1421 (76.7)	1.00		
<b>14. Previous HIV testing</b>					
Yes	665	586 (88.1)	2.16	(1.66-2.80)	< 0.001
No	1787	1384 (77.4)	1.00		
<b>BEHAVIORAL</b>					
<b>15. Age of first sex (years old)</b>					
< 18	1186	1093 (92.2)	1.33	(0.98-1.80)	0.066
≥ 18	875	786 (89.8)	1.00		
<b>16. Sex under the influence of drugs</b>					
Yes	192	175 (91.2)	2.69	(1.62-4.48)	< 0.001
No	2238	1774 (79.3)	1.00		
<b>17. Sex under the influence of alcohol</b>					
Yes	606	565 (93.2)	4.36	(3.12-6.10)	< 0.001
No	1822	1384 (76.0)	1.00		
<b>18. Received money for sex</b>					
Yes	299	277 (92.6)	3.46	(2.21-5.40)	< 0.001
No	2136	1676 (78.5)	1.00		
<b>19. Offered money for sex</b>					
Yes	423	379 (89.6)	2.39	(1.72-3.32)	< 0.001
No	2013	1576 (78.3)	1.00		
<b>20. Multiple sex partners</b>					
> 1	1518	1395 (91.9)	8.75	(6.94-11.02)	< 0.001
≤ 1	797	450 (56.5)	1.00		

\* Not always using condoms in all practices during lifetime, i.e., sometimes, rarely or never.

\*\* Prevalence of unprotected sex for each category.

\*\*\* Minimum wage = US\$200.

† Sexually transmitted infections.

prior six months and also showed that knowledge alone did not predict any risk behavior.<sup>30</sup> The investigators concluded that HIV/AIDS information was more salient for patients who are sexually active, and that information is acquired on a need-to-know basis. In addition, increased risk of unsafe sex among patients who perceived themselves as being at high or some risk for HIV/AIDS may demonstrate that patients accurately perceive their risk, though we cannot claim this conclusively since the temporal relationship between risk and perception was not established in our study.

In this sample, substance use disorder diagnosis did not confer significant increased risk relative to patients in treatment for psychosis or bipolar disorders. In the multivariate model in which potential confounding factors were controlled for, those with a chart diagnosis of anxiety or depression disorders had nearly a three-fold increase in the likelihood of having had unprotected sex relative to patients with psychosis or bipolar disorders. This argues for equal access to HIV-related services for psychiatric patients regardless of substance use. Our sample excluded CAPS which exclusively treated substance use disorders as primary

Table 2 – Univariate analysis of lifetime unprotected sex\*, PESSOAS Project, Brazil, 2006 (cont'd) – PART III

Characteristics	Total	Unprotected sex**	Odds Ratio	(95% CI)	p-value
<b>BEHAVIORAL</b>					
<b>21. Lifetime physical violence</b>					
Yes	1420	1177 (82.9)	1.45	(1.19-1.76)	< 0.001
No	1027	790 (76.9)	1.00		
<b>22. Lifetime sexual violence</b>					
Yes	484	423 (87.4)	1.90	(1.43-2.54)	< 0.001
No	1955	1534 (78.5)	1.00		
<b>23. Lifetime verbal violence</b>					
Yes	1687	1410 (83.6)	1.86	(1.51-2.28)	< 0.001
No	760	557 (73.3)	1.00		
<b>24. HIV/AIDS knowledge</b>					
Poor	1080	816 (75.6)	0.56	(0.46-0.69)	< 0.001
Good	1349	1141 (84.6)	1.00		
<b>25. HIV risk self perception</b>					
High/some risk	953	816 (85.6)	1.61	(1.29-2.01)	< 0.001
None	1377	1084 (78.7)	1.00		
<b>26. History of incarceration</b>					
Yes	631	546 (86.5)	1.79	(1.39-2.31)	< 0.001
No	1821	1424 (78.2)	1.00		
<b>27. Lifetime illicit drug use</b>					
Yes	616	546 (88.6)	2.25	(1.72-2.96)	< 0.001
No	1836	1424 (77.6)	1.00		
<b>28. Lifetime injection drug use</b>					
Yes	70	66 (94.3)	4.12	(1.49-11.36)	0.003
No	2367	1894 (80.0)	1.00		
<b>29. Lifetime cigarette smoking</b>					
Yes	1748	1468 (84.0)	2.07	(1.68-2.55)	< 0.001
No	693	497 (71.7)	1.00		
<b>30. Lifetime alcohol use</b>					
Yes	1583	1347 (85.1)	2.25	(1.84-2.76)	< 0.001
No	869	623 (71.7)	1.00		

\* Not always using condoms in all practices during lifetime, i.e., sometimes, rarely or never.

\*\* Prevalence of unprotected sex for each category.

\*\*\* Minimum wage = US\$200.

† Sexually transmitted infections.

diagnoses, which may have underestimated its effect on lifetime sexual behavior. In addition, we relied on chart diagnoses rather than obtaining research diagnoses at the time of the risk behavior interview. It should be noted, however, that many seminal studies among psychiatric patients also used chart diagnoses<sup>31</sup> and that most studies in the literature are highly selective with regard to psychiatric diagnoses, i.e., SMI, whereas the present study represents all diagnoses addressed in the public psychiatric treatment system.

Sociodemographic and substance use patterns of association to lifetime sex risk were not dissimilar to those found in other populations studied in the AIDS epidemic. Patients over the age of 40 were one-and-a-half times as likely as those under 40 to have had unprotected sex, which is expected given the larger number of sex occasions and opportunities older people have compared to younger people. Women showed nearly a two-fold increased likelihood of having had unprotected sex compared to men. In addition, being

married or in a stable union conferred nearly a nine-fold increase in the likelihood of having had unprotected sex compared to those currently single, divorced, or widowed. We did not assess whether monogamy was an expectation in these relationships nor if participants were aware of their partners' history of HIV risk behaviors (e.g., sexual risk or IDU) or HIV testing. Monogamy increases vulnerability to HIV when the sexual partner is risky, as some studies in Brazil and elsewhere with other populations have demonstrated: married/monogamous women may be at increased risk.<sup>32,33</sup> Sex under the influence of alcohol had more than a two-fold increase in the likelihood of having had unprotected sex, and lifetime cigarette smoking conferred more than one-and-a-half times the likelihood of having had unprotected sex. Rather than suggesting a causal relationship, this finding appears to provide evidence of an underlying tendency toward sensation-seeking, risk-taking, or impulsivity that leads people both to use substances and to have riskier sex first posited by Leigh and Stall.<sup>34</sup>

**Table 3 – Multivariate logistic analysis of lifetime unprotected sex\*, PESSOAS Project, 2006**

Characteristics	OR	(95% CI)
<b>Gender</b>		
Female	1.78	(1.34-2.37)**
Male	1.00	
<b>Age (years old)</b>		
> 40	1.62	(1.22-2.14)**
18-39	1.00	
<b>Marital status</b>		
Married or in union	8.55	(5.77-12.7)**
Single, divorced or widowed	1.00	
<b>History of STI</b>		
Yes	2.04	(1.39-3.01)**
No	1.00	
<b>Sex under the influence of alcohol</b>		
Yes	2.34	(1.58-3.47)**
No	1.00	
<b>Lifetime cigarette smoking</b>		
Yes	1.64	(1.23-2.19)**
No	1.00	
<b>Current housing partnership</b>		
Living with others	0.70	(0.46-1.07)
Living with children or partners only	2.72	(1.35-5.48)***
Living in hospitals	0.54	(0.32-0.94)***
Living alone	1.00	
<b>Number of sexual partners ever</b>		
> 1	10.58	(7.87-14.23)**
≤ 1	1.00	
<b>Psychiatric diagnosis</b>		
Anxiety	2.82	(1.04-7.66)***
Depression	2.04	(1.22-3.40)***
Substance use	1.07	(0.57-2.00)
Others	0.97	(0.70-1.34)
Psychoses and bipolar disorder	1.00	

\* Not always using condoms in all practices during lifetime; \*\* *p*-value < 0.001; \*\*\* *p*-value < 0.05.

One significant contextual factor that may be specific to this population which has fewer options for independent living is the finding that those patients currently living only with either children or partners had nearly a three-fold increased risk of unprotected sex compared to those living alone, whereas patients currently living in the hospital had a significantly reduced risk of lifetime unsafe sex. Prior studies of people with SMI who are homeless suggested that a lack of privacy might contribute to unsafe sexual encounters since planning to use condoms and taking the time to obtain and use them would be difficult for those living in parks or on the streets.<sup>35</sup> This study is the first to examine the relationship between sexual risk-taking and the living arrangements of those with SMI who are not undomiciled and points toward the need for future research regarding the effects of privacy and care-taking in terms of how people prioritize their sexual safety.

The public mental health system in Brazil treats a wide range

of conditions such as dementia and cognitive impairment caused by malnutrition as well as SMI and the affective disorders. To the extent that other countries and localities have similarly broad treatment mandates, this study provides striking evidence from a national sample of the enormous risks people with psychiatric illness have engaged in over their lifetimes, with implications for needed testing, treatment, and prevention interventions and services for enhancing awareness of these risks among patients, their families, and providers and decision-makers who comprise the mental health care system.

Most HIV-related research about psychiatric populations has focused on those with SMI. This study shows that this population does engage in high rates of lifetime risk behaviors but that those with anxiety disorders severe enough to warrant psychiatric hospitalization or outpatient care have even higher rates and need programming specific to their psychiatric and living conditions. Severe anxiety disorders can affect awareness, attitudes, and intentions, all of which have been shown to impinge upon risk behavior change. Even though a limitation of this study is that diagnosis was obtained from chart review, focusing on these aspects of the disorder may be especially important in future intervention development and research that build upon existing interventions and processes<sup>36</sup> that allow for a greater understanding of the contexts of psychiatric partners' lives and increase their ability to make informed decisions about their sexual health.

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Writing group member	Employment	Research grant <sup>1</sup>	Other research grant or medical continuous education <sup>2</sup>	Speaker's honoraria	Ownership interest	Consultant/ Advisory board	Other <sup>3</sup>
Mark Drew Crosland Guimarães	UFMG	-	-	-	-	-	-
Karen McKinnon	NY State Psychiatric Institute/HIV Center	-	-	-	-	-	-
Lorenza Nogueira Campos	Hospital Eduardo de Menezes/ FHEMIG	-	-	-	-	-	-
Ana Paula Souto Melo	Instituto Raul Soares/ FHEMIG	-	-	-	-	-	-
Milton Wainberg	NY State Psychiatric Institute/HIV Center	-	-	-	-	-	-

\* Modest

\*\* Significant

\*\*\* Significant. Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.

Note: UFMG = Universidade federal de Minas Gerais; FHEMIG = Fundação Hospitalar do Estado de Minas Gerais.

For more information, see Instructions for Authors.

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