# Sexual behavior at risk for HIV/AIDS and sexual transmission diseases in male patients with psychotic disorders

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***Conducta sexual de riesgo para VIH/SIDA y enfermedades de transmisión sexual en pacientes varones con trastornos psicóticos***

**Summary**

Introduction. *To assess sexual risk behavior for human immunodeficiency virus (HIV) infection and other sexually transmitted diseases (STD) in males with psychotic disorders and to compare it to that of the patients without these disorders.*

Methods. *We used a structured interview to collect information regarding sexual risk behavior, knowledge about HIV/AIDS, history of STD and drug use. We included 106 patients with psychotic disorders from a psychiatric institution and 89 control medical out-patients from a general hospital.*

Results. *Among psychotic patients, 70.8% declared that they had had sexual intercourse at some time in their lives and 37.7% during the last year. The psychotic patients had significantly less knowledge about HIV/AIDS than the controls and they had a smaller proportion of stable sexual partners and greater frequency of sexual risk behaviors, such as inconsistent condom use and sexual intercourse with prostitutes. In psychotic patients, inconsistent condom use was associated with more hospitalizations.*

Conclusions. *Although patients with psychotic disorders have reduced sexual activity, they present greater frequency of sexual risk behaviors that predispose them to acquire HIV infection and other STD.*

***Key words:*** *Psychotic disorders. Sexual behavior. Sexually transmitted diseases. HIV. Acquired immunodeficiency syndrome.*

**Resumen**

Introducción. *Evaluar el comportamiento sexual de riesgo para adquirir infección por el virus de inmunodeficiencia humana (VIH) y otras enfermedades de transmisión sexual (ETS) en pacientes varones con trastornos psicóticos y compararlo con el de pacientes sin dichos trastornos.*

Métodos. *Se utilizó una entrevista estructurada para recolectar información sobre prácticas sexuales de riesgo, conocimientos acerca del VIH/SIDA, antecedentes de ETS y consumo de drogas. Se incluyeron 106 pacientes varones con trastornos psicóticos de una institución psiquiátrica y 89 controles provenientes de consultorios de medicina de un hospital general.*

Resultados. *Entre los pacientes psicóticos, el 70,8% respondieron haber tenido relaciones sexuales alguna vez en su vida y el 37,7% en el último año. Los pacientes psicóticos tuvieron significativamente menores conocimientos acerca del VIH/SIDA que los controles, así como una menor proporción de parejas sexuales estables y mayor frecuencia de conductas sexuales de riesgo, tales como uso inconsistente del preservativo y relaciones con trabajadoras sexuales. El empleo inconsistente de preservativos se asoció con mayor número de hospitalizaciones en pacientes psicóticos.*

Conclusiones. *Los pacientes con trastornos psicóticos, a pesar de tener en general una menor actividad sexual, presentan con mayor frecuencia conductas sexuales de riesgo para adquirir infección por VIH y otras ETS.*

***Palabras clave:*** *Trastornos psicóticos. Conducta sexual. Enfermedades de transmisión sexual. VIH. Síndrome de inmunodeficiencia adquirida.*

## INTRODUCTION

In Peru, the epidemic of the acquired immunodeficiency syndrome (AIDS) has grown quickly, from 22 cases in 1986 to 1081 in 1997, 11975 patients being reported up to December 2001. The most frequent transmission form was sexual (96% of all the cases)[1]. This problem has been worsened due to the spread of other sexual transmission diseases (STD), especially ulcerative disease, that increase the probability of HIV transmission during sexual intercourse. The above has lead to the evaluation of the population groups that have the greatest frequency of risk behaviors, such as sex workers, homosexuals and intravenous drug users.

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However, little attention has been given to those patients with psychiatric problems and especially with psychotic disorders[2], even though these persons, due to the characteristics of their disease, such as inadequate appraisal of reality and the consequences or risks of their behavior, affective instability, poor impulse control and self-destructive behavior, can have greater risk of contracting STD and HIV[3]. Furthermore, it has been found that they have less knowledge about risk practices to acquire HIV than the general population[4,5].

Information on sexuality and risk behaviors of individuals with mental disorders is scarce, so that there is presently no well defined strategy to avoid STD and HIV contagion in these persons. In the last 15 years, education and prevention programs have been developed to reduce STD and HIV transmission aimed principally to the traditional risk groups[6-8]. However, interventions in psychiatric patients have been neglected[9]. For the same reason, this present study aims to assess sexual behavior at risk to contract STD and HIV in patients with psychotic disorders and compare it with that of the control patients.

## METHOD

This is a cross sectional study performed between November 1998 and May 1999 in two hospitals located in the northern part of the city of Lima (Peru). A structured interview based on other previously used instruments[10,11] was used as a source of information. In this interview, 51 questions were used to obtain demographic data, information on specific behaviors at risk of acquiring STD and HIV, knowledge on HIV/AIDS, history of STD, drug consumption, exchange of drugs for sex, alcohol or drug consumption before having sex and number of previous psychiatric hospitalizations. Direct interviews were performed in a relaxed and private setting, carried out by previously trained health care personnel.

For the purposes of the study, *sexual intercourse* was defined as any vaginal, oral or anal sexual practice with a partner. *Inconsistent use of condoms* was considered when the individual did not always use it during the sexual intercourse. *Sexual risk partner* was considered the one who belonged to one of the following groups: sex workers, homosexuals or casual partner. Stable sexual partner was the one who had a minimum duration of 6 months and whose sexual contact frequency was at least once a month.

Out-patients or hospitalized ones from the National Institute of Mental Health Honorio Delgado-Hideyo Noguchi (INSM HD-HN) with psychotic disorders and control patients from the out-patient Medicine Service of the Hospital Nacional Cayetano Heredia were included. Patients aged 18 years or more, male gender, who accepted to participate in the study signing an informed consent were considered. Those patients who presented problems at the time of the interview that prevented communication with the interviewer, such as marked psychotic symptoms, mental retardation or awareness state, speech or hearing disorders, were excluded.

## RESULTS

### General characteristics

A total of 109 patients with psychotic disorder and 91 controls were invited to participate in the study. Three out the 109 psychotic patients refused to do so and 2 of the controls did not accept (global refusal rate: 3%). A total of 98% of the psychotic patients and controls came from Lima and Callao and the rest from other places in Peru. The demographic characteristics of both groups are presented in table 1.

### Psychotic patients

Of the 106 psychotic patients, 75.5% were seen as out-patients and 24.5% in hospitalization regime; further more, 57.5% reported background of previous psychiatric hospitalization. Diagnoses according to the DSM-IV criteria were: paranoid schizophrenia (84.9%), schizophreniform disorder (6.6%), schizoaffective disorder (3.8%), catatonic schizophrenia (1.9%) and others (2.7%).

The out-patients and hospitalized ones were similar in regards to demographic data, record of having had sexual intercourse in the last year, type of sexual partner, frequency of condom use with a sexual risk partner, background of STD and drug consumption. However, the proportion of patients who had sexual intercourse at some time in their lives was significantly greater in those

**TABLE 1. Demographic characteristics of the patients**

| *Demographic data* | *Psychotics (n = 106)* | *Controls (n = 89)* |
|---|---|---|
| Age (years) ± SD | 29.0 ± 8.2 | 31.3 ± 12.0 |
| Disease time (years) ± SD | 9.0 ± 6.0 | — |
| Schooling years ± SD | 11.0 ± 2.8 | 11.7 ± 2.9 |
| Civil status (%) | | |
| Single | 91.5 | 48.3 |
| Married/living together | 6.6 | 48.3 |
| Divorced/separated | 1.9 | 2.3 |
| Widow/widower | 0.0 | 1.1 |
| Occupation (%) | | |
| None | 42.5 | 9.0* |
| Professional or other | 57.5 | 91.0* |
| Social economical level** (%) | | |
| A | 2.8 | 1.1 |
| B | 6.6 | 3.4 |
| C | 52.8 | 56.2 |
| D | 35.9 | 37.1 |
| Does not live in Lima (travelers) | 1.9 | 2.2 |

* $p < 0{,}001$, Chi square test; ** According to the definition of the National Institute of statistics and Sciences Computer (Perú); SD: standard deviation.

seen as out-patients than in the hospitalized ones (76.3% compared to 53.8%; p = 0.029; Chi square test).

### Sexual risk behavior

In comparison with the controls, a significantly lower proportion of psychotic patients had had sexual intercourse sometime in their lives and during the last year; furthermore, the psychotic patients had a lower number of sexual partners. However, they presented greater frequency of relationships with sex workers and lower number of stable partners (table 2). On the other hand, during the last year, the psychotic patients recorded a strong tendency to declare sex workers as partners in comparison to the controls (18.9% compared to 9%; p = 0.05; Chi square test) and a significantly lower proportion reported having a stable sex partner (16% compared to 71.9%; p < 0.001; Chi square test).

There was a tendency for the psychotic patients to not use a condom with sexual risk partners or did so inconsistently (table 2). Furthermore, it was found that the inconsistent use of condoms among psychotic patients was associated with a greater number of previous hospitalizations (1.87 ± 2.10 hospitalizations for the patients who inconsistently used the condom compared to 1.02 ± 1.38 for the rest; p < 0.05; Kruskal-Wallis test), but not with the number of years of schooling, disease time, patient age and knowledge level on HIV/AIDS.

A total of 7.5% of the psychotic patients admitted having had homosexual practices during the last year. No control or psychotic patient had anal receptive intercourse or performed fellatio.

### Knowledge on HIV/AIDS

The psychotic patients had significantly less knowledge about HIV/AIDS than the controls. The questions were true/false type (table 3): The average correct responses were greater in the controls (8.92 ± 1.46 compared to 7.21 ± 2.27; p < 0.001; Student's «t» test). Among the psychotic individuals, it was found that out-patients had more correct responses than the hospitalized ones (7.66 ± 1.90 compared to 5.81 ± 2.74; p < 0.01; Student's «t» test).

### STD and drug consumption background

Similar proportions of patients with STD were found in the last 5 years among psychotic and control subjects (5.6% and 4.5%, respectively). The most frequent STD in both groups was gonorrhea. The values found for psychotic patients were: 3.8% for gonorrhea and 0.9% both for soft chancre and phthiriasis. Regarding the controls, there was gonorrhea in 3.4% and genital herpes in 1.1%.

Regarding the use of addictive substances, the percentage of patients who reported having consumed drugs at some time in their lives was greater among psychotic patients, reaching statistical significance for the cocaine base paste (10.4% compared to 2.2%; p = 0.02; Chi square test). Among the psychotics, 39.6% consumed alcohol at some time until losing consciousness or being drunk, 11.3% marijuana and 8.5% cocaine hydrochloride (1.9% during the last year). No individual admitted having used intravenous drugs. The practice of exchanging sex for drugs was unusual among the psychotic patients (4%) and absent among the controls. The

**TABLE 2. Sexual behavior of the psychotic patients and controls**

| | *Psychotics (n = 106)* | *Controls (n = 89)* | *p* |
|---|---|---|---|
| Sexual intercourse (%) | | | |
| Sometime in their life | 70.8 (61.1-79.2)* | 87.6 (79.0-93.7)* | < 0,01** |
| During the last year | 37.7 (28.5-47.7)* | 78.7 (68.7-86.6)* | < 0,001** |
| Number of sex partners (mean ± SD) | | | |
| In the last month | 0.15 ± 0.39 | 0.72 ± 0.58 | < 0,001*** |
| In the last year | 1.28 ± 3.18 | 1.34 ± 2.04 | < 0,001*** |
| Stable | 0.18 ± 0.43 | 0.83 ± 0.66 | < 0,001*** |
| Frequency of sexual intercourse (mean ± SD) | | | |
| in the last month | | | |
| Sex workers | $3.77 \times 10^{-2} \pm 0.19$ | $1.12 \times 10^{-2} \pm 0.11$ | 0,25*** |
| Homosexuals | $9.43 \times 10^{-3} \pm 9.71 \times 10^{-2}$ | 0 ± 0 | 0,36*** |
| Casual partners | $9.43 \times 10^{-3} \pm 9.71 \times 10^{-2}$ | $4.49 \times 10^{-2} \pm 0.33$ | 0,46*** |
| Frequency of sexual intercourse (mean ± SD) | | | |
| in the last year | | | |
| Sex workers | 0.79 ± 2.56 | 0.15 ± 0.55 | < 0,05*** |
| Homosexuals | $8.49 \times 10^{-2} \pm 0.57$ | $1.12 \times 10^{-2} \pm 0.11$ | 0,40*** |
| Casual partners | 0.29 ± 1.44 | 0.42 ± 1.98 | 0,67*** |
| Use of condom in last sexual intercourse with risk partner (%) | 65 ( n = 20/31) | 75 (n = 15/20) | 0,61** |
| Inconsistent use of condom with risk partner in last year (%) | 14.2 | 7.9 | 0,17** |

* 95% confidence interval; ** chi-square test; *** Kruskal-Wallis test; SD: standard deviation.

**TABLE 3. Percentage of patients who answered correctly on HIV/AIDS**

| *Item* | *Psychotics (n = 106)* | *Controls (n = 89)* | *p** |
|---|---|---|---|
| Most of the persons become ill rapidly after contracting the AIDS virus | 57.5 | 82.0 | < 0.001 |
| Women cannot contract AIDS if they only have sex with men | 73.6 | 91.0 | < 0.01 |
| The persons who can infect you with the AIDS virus always look ill | 61.3 | 82.0 | < 0.01 |
| Men cannot contract AIDS if they only have sex with women | 74.5 | 94.4 | < 0.001 |
| Washing after having sex stops contraction of AIDS | 56.6 | 84.3 | < 0.001 |
| Only homosexual men can contract AIDS | 72.6 | 91.0 | < 0.01 |
| To contract AIDS, it is necessary to have multiple partners | 59.4 | 77.5 | < 0.05 |
| The use of condom can help prevent AIDS | 85.8 | 97.8 | < 0.01 |
| Babies in gestation can contract AIDS from their mothers | 85.8 | 94.4 | 0.05 |
| You can contract AIDS from sexual contact | 93.4 | 97.8 | 0.19 |

* Chi-square test.

latter, in comparison to the psychotics, consumed alcohol or another type of drugs more frequently before having sexual intercourse (60.4 % compared to 32.7 %; p < 0.01; Chi squared test).

## DISCUSSION

Psychotic and control patients were comparable in regards to demographic characteristics, except that the former were single and unemployed in a greater percentage. A high proportion of single patients (94.7%), similar to ours (91.5 %), was found in a sample of schizophrenic patients of a psychiatric hospital in Lima[12]. Another study with hospitalized schizophrenics also found a similar percentage of unemployed (58.8%)[13].

The proportion of psychotic patients who had sexual intercourse during their lifetime (70.8 %) was significantly less than that of the controls and was also less than that found in a study performed among Peruvian university students (80%)[14], even though the age of the latter sample was younger (23.23 years). Furthermore, the proportion of psychotics without sexual intercourse during the last year (62.3%) was greater than that of the controls, placing this subgroup of patients in a position of less risk of exposure to STD/HIV in this period. This percentage was similar to the 58% found in a United States of America study with schizophrenics[15], but high in comparison with other studies also performed in the United States among patients with chronic mental disorders[11,16].

Several studies have described a sexual risk behavior in patients with mental disorders. Sacks et al.[17] found that 13% of 113 hospitalized psychiatric patients had sex without protection with multiple partners, 12% had anal sex without protection with males and 7% were intravenous drug users. Zafrani et al.[4] found that 21% of 265 psychiatric out-patient presented risk behaviors such as promiscuity, homosexual or bisexual practices, and intravenous drug use. In our study, even the psychotic patients had fewer sexual relationships, these were with groups of elevated risk to acquire STD and HIV: the percentage of psychotic patients who admitted having intercourse with sex workers during the last year was twice that found in the controls and the proportion that reported having a stable sexual partner was significantly lower. It has been described that deterioration of social skills and marginalization of individuals with psychotic disorders make it difficult to maintain solid affective bonds with a stable sex partner[9,18].

In Peru, masculine homosexual activity is associated with greater risk to acquire HIV infection. This behavior can represent a significant source of STD and HIV transmission, because it implies very frequent sexual activity, risky sexual practices such as anal sex and bisexual behavior[19]. In our study, the percentage of psychotic patients with homosexual practices during the last year was 7.5%, a low value in comparison with other studies, that found between 16% and 22 %[5,16].

The percentage of psychotic patients who used the condom inconsistently with risk partners (14.2 %) was greater than that of the controls (7.9 %), however it did not reach a significant difference. In a study performed in the United States, a higher percentage was reported %)[16]. It should be stated that that sample was characterized by a high prevalence of cocaine consumption (35 %) in comparison with that found in our study (1.9 %).

Sexual risk behavior among psychotic patients is very important because it is strongly associated to greater HIV prevalence. In a study performed with hospitalized psychiatric patients[20], 41 % seroprevalence was found among patients with risk behaviors (multiple partners, intercourse with sex workers, intravenous drug user, etc.). Another study found 0.6 % seroprevalence in low risk psychiatric subjects, but 14.4 % in high risk individuals[21].

The psychotic patients had substantial deficiencies in knowledge about HIV/AIDS in comparison to the controls; however, both groups presented an elevated percentage of correct responses in regards to the HIV transmission form and the use of condoms to avoid contagion. However, in other countries, the patients could be better informed. For example, in a study performed in Canada with psychotic individuals[22], only 27.5% thought that most persons became ill rapidly after contracting HIV, on the contrary to 42.5% of the psychotic patients of our study. It has been demonstrated that educational interventions in patients with mental disorders produce significant changes in sexual behavior, increasing the patients' knowledge about AIDS and reducing risk behavior[9,18,23].

In our study, the STD background was similar between psychotics and controls, on the contrary to a United States study with 426 psychiatric patients in which the STD rates were significantly greater than in the general population[24]. In another study with psychiatric out-patients, it was found that 33% reported having been diagnosed at some time of syphilis, gonorrhea, *Chlamydia trachomatis* or genital herpes[11]. These discrepancies in the results can be because our sample was not large enough or because there was a tendency to give socially accepted answers.

Among the psychotics, consumption of cocaine base paste was greater and there was a non-significant tendency to use another type of drugs. Special attention should be given to the fact that the values of marijuana consumption (11.3 %), cocaine hydrochloride (8.5 %) and cocaine base paste (10.4%) are much greater than those found in the general Peruvian population (6.4%, 1.9 % and 3.1 %, respectively)[25]. Comorbidity between psychiatric disorder and drug abuse have been well documented in the literature, it being associated to an increase in sexual risk behavior[26-28]. The use of drugs can decrease the perception of the risk of acquiring STD and HIV significantly, especially in psychotic subjects[29]. Also exchanging sex for drugs has been reported in individuals with mental disorders[15,30]. No patient in our study reported the intravenous use of drugs, which contrasts with that observed in other countries, such as Italy and the United States, in which the prevalence varies from 4 % to 21 %[5,11,30,31].

Early detection and treatment of patients with STD and HIV are of extreme importance since this strategy has been shown to be effective in reducing the incidence of these infections; it improves the prognosis, decreases the frequency of complications and, in the case of AIDS, decreases mortality[32,33]. Our study reveals that psychotic patients present sexual behaviors that place them at risk of acquiring STD and HIV, so that it is necessary to direct our efforts towards this population group, in which interventions have not been made in this aspect. This has already been demonstrated in a study performed in a psychiatric hospital of New York, where 80 % of the individuals infected by HIV were discharged without having detected their seropositive condition and 51% of the patients with sexual risk practices did not undergo tests to discard HIV[34].

The growing spread of STD and HIV in the world, besides the unlikely perspective of obtaining a vaccine or final treatment for HIV in the short term, has led the medical community to concentrate their efforts on the prevention of the spread of these diseases, implementing educational interventions, aimed at changing sexual risk behavior, greater access to the public health services of STD and AIDS, and the promotion of the use of condoms in the general population and specifically in the risk groups. Cognitive, behavior and social deficiencies of the subjects with psychotic disorders make interventions with specific preventive strategies necessary for this population group in order to modify already identified sexual behavior in our study that means an increased risk of becoming infected with STD and HIV.

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## REFERENCES

1. Ministerio de Salud del Perú. Información Estadística. Programa de Control de ETS y SIDA (PROCETSS), diciembre 2001.
2. Seeman MV, Lang M, Rector N. Chronic schizophrenia: a risk factor for HIV? Can J Psychiatry 1990;35:765-8.
3. Grassi L. Risk of HIV infection in psychiatrically ill patients. AIDS Care 1996;8:103-16.
4. Zafrani M, McLaughlin DG. Knowledge about AIDS. Hosp Community Psychiatry 1990;41:1261.
5. McDermott BE, Sautter FJ, Winstead DK, Quirk T. Diagnosis, health beliefs, and risk of HIV infection in psychiatric patients. Hosp Community Psychiatry 1994;45:580-5.
6. Klein DE, Sullivan G, Wolcott DL, Landsverk J, Namir S, Fawzy FI. Changes in AIDS risk behavior among homosexual male physicians and university students. Am J Psychiatry 1987;144:742-7.
7. Becker MH, Joseph JG. AIDS and behavioral change to reduce risk: a review. Am J Public Health 1988;78:394-410.
8. The National Institute of Mental Health (NIMH) Multisite HIV Prevention Trial Group. The NIMH Multisite HIV Prevention Trial: reducing HIV sexual risk behavior. Science 1998;280:1889-94.
9. Kalichman SC, Sikkema KJ, Kelly JA, Bulto M. Use of a brief behavioral skills intervention to prevent HIV infection among chronic mentally ill adults. Psychiatr Serv 1995; 46:275-80.
10. Muñoz D. Prácticas sexuales de riesgo para la transmisión de VIH/SIDA y otras ETS en varones que acuden a prostíbulos del Callao (tesis para optar el título de médico-cirujano). Lima, Perú: Universidad Peruana Cayetano Heredia, 1995.
11. Kelly JA, Murphy DA, Bahr GR, Brasfield TL, Davis DR, Hauth AC, et al. AIDS/HIV risk behavior among the chronic mentally ill. Am J Psychiatry 1992;149:886-9.
12. Caballero NE. Indicadores de cronicidad en esquizofrenia (tesis para obtener el título de doctor en medicina). Lima, Perú: Universidad Peruana Cayetano Heredia, 1991.
13. Guerra M. Hospitalización breve: resultados preliminares de un año de seguimiento de pacientes esquizofrénicos crónicos reagudizados atendidos en el Servicio de Emergencia del Hospital Víctor Larco Herrera (tesis para optar el título de especialista en psiquiatría). Lima, Perú: Universidad Peruana Cayetano Heredia, 1991.
14. Valdez H. Prácticas sexuales en la población de tres universidades de Lima (tesis para optar el título de bachiller en medicina). Lima, Perú: Universidad Peruana Cayetano Heredia, 1990.
15. Cournos F, Guido JR, Coomaraswamy S, Meyer-Bahlburg H, Sugden R, Horwath E. Sexual activity and risk of HIV infection among patients with schizophrenia. Am J Psychiatry 1994;151:228-32.
16. Susser E, Valencia E, Miller M, Tsai W-Y, Meyer-Bahlburg H, Canover S. Sexual behavior of homeless mentally ill men at risk for HIV. Am J Psychiatry 1995;152:583-7.

17. Sacks MH, Perry S, Graver R, Shindledecker R, Hall S. Self-reported HIV-related risk behaviors in acute psychiatric inpatients: a pilot study. Hosp Community Psychiatry 1990;41:1253-5.
18. Carmen E, Brady SM. AIDS risk and prevention for the chronic mentally ill. Hosp Community Psychiatry 1990; 41:652-7.
19. Cáceres C, Gotuzzo E, Wignall S, Campos M. Comportamiento sexual y seroprevalencia del virus de inmunodeficiencia humana tipo 1 en varones homosexuales peruanos. Bol Of Sanit Panam 1991;111:218-30.
20. Sacks MH, Silberstein C, Weiler P, Perry S. HIV related risk factors in acute psychiatric inpatients. Hosp Community Psychiatry 1990;41:449-51.
21. Volavka J, Convit A, O'Donnell J, Douyon R, Evangelista C, Czobor P. Assessment of risk behaviors for HIV infection among psychiatric inpatients. Hosp Community Psychiatry 1992;43:482-5.
22. Chuang HT, Atkinson M. AIDS knowledge and high-risk behavior in the chronic mentally ill. Can J Psychiatry 1996; 41:269-72.
23. Kelly JA, McAuliffe TL, Sikkema KJ, Murphy DA, Somlai AM, Mulry G, et al. Reduction in risk behavior among adults with severe mental illness who learned to advocate for HIV prevention. Psychiatr Serv 1997;48:1283-8.
24. Sitzman BT, Burch EA, Barlett LS, Urrutia G. Rates of sexually transmitted diseases among patients in a psychiatric emergency service. Psychiatr Serv 1995;46:136-40.
25. CEDRO. Epidemiología de drogas en la población urbana peruana-1995 (encuesta en hogares). Monografía de Investigación n.° 15. Centro de Información y Educación para la Prevención del Abuso de Drogas (CEDRO). Lima-Perú, 1997.
26. Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL, Goodwin FK. Comorbidity of mental disorders with alcohol and other drug abuse. JAMA 1990;264:2511-8.
27. Shafer MA, Hilton JF, Ekstrand M, Keogh J, Gee L, Di Giorgio-Hagg L, et al. Relationship between drug use and sexual behaviors and the occurrence of sexually transmitted diseases among high-risk male youth. Sex Transm Dis 1993;20:307-13.
28. Zafrani M, McLaughlin DG. Knowledge about AIDS. Hosp Community Psychiatry 1990;41:1261.
29. Judson FN, Paalman MEM. Behavioral interventions in industrialized countries. En: Wasserheit JN, Aral SO, Holmes KK, editores. Research issues in human behavior and sexually transmitted diseases in the AIDS era. Washington D.C.: American Society for Microbiology, 1991.
30. Kalichman SC, Kelly JA, Johnson JR, Bulto M. Factors associated with risk for HIV infection among chronic mentally ill adults. Am J Psychiatry 1994;151:221-7.
31. Grassi L, Peron L, Ferri S, Pavanati M. Human immunodeficiency virus-related risk behavior among Italian psychiatric inpatients. Compr Psychiatry 1999;40:126-30.
32. Friedland GH. Early treatment for HIV. N Engl J Med 1990; 332:1000-2.
33. Mussico M, Lazzarin A, Nicolosi A, Gasparini M, Costigliola P, Arici C, Saracco A, for the Italian Study Group on HIV Heterosexual Transmission. Antiretroviral treatment of men infected with human immunodeficiency virus type 1 reduces the incidence of heterosexual transmission. Arch Intern Med 1994;154:1971-6.
34. Sacks M, Dermatis H, Looser-Ott S, Burton W, Perry S. Undetected HIV infection among acutely ill psychiatric inpatients. Am J Psychiatry 1992;149:544-5.