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RESEARCH ARTICLE

SOCIO-DEMOGRAPHIC AND PSYCHOSOCIAL CORRELATES OF PSYCHIATRIC MORBIDITY IN HIV POSITIVE PATIENTS IN A TERTIARY HOSPITAL IN NIGERIA

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ABSTRACT

Background: The acquired immunodeficiency syndrome (AIDS) is a lethal neuro-medical disorder caused by infection with the human immunodeficiency virus (HIV). The consequences of HIV/AIDS are myriad and devastating, but there has been paucity of studies on psychiatric morbidity in HIV/AIDS patients in the undeveloped world.

Aim: The study aims to investigate the socio-demographic and psychosocial correlates of psychiatric morbidity in HIV positive patients in a tertiary hospital in the Niger Delta region of Nigeria.

Methods: Using a systematic sampling method, 353 subjects were recruited into two groups; HIV positive subjects from the RVD clinic and HIV negative subjects from the GOPD clinic. They were assessed using a self-designed questionnaire to elicit socio-demographic and clinical variables. The subjects were screened for psychological distress with a 12 item General Health Questionnaire and diagnoses made using Present State Examination (PSE) manual (version 10). Data was analysed using the statistical package for social sciences (SPSS, version 15).

Results: Of the 241 subjects assessed, 89 were HIV positive and 152 HIV negative. Significantly more HIV positive patients practiced safe sex, denied the history of multiple sexual partners during the one month period before the interview and admitted to using psychoactive substances. Significantly more females presented with psychiatric morbidity and the only significant determinant of psychiatric morbidity was the presence of organized social support.

Conclusion: In view of the monumental and diverse challenges raised by HIV/AIDS, effort should not be spent only on the chemotherapeutic management of this global nightmare but there's urgent need to step up the management of the resultant associated psychosocial challenges.

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INTRODUCTION

The acquired immune deficiency syndrome (AIDS) is a lethal neuro-medical disorder caused by infection with the human immunodeficiency virus (HIV) types 1 and 2 (Saddock et al., 2000). The treatment of HIV/AIDS is manly hinged on the use of anti-retroviral agents in combinations of highly active antiretroviral therapy (HAART). This combines the use of multiple drugs of different classes alongside a protease inhibitor. This treatment modality has transformed HIV/AIDS from a "death sentence" to a life threatening and choric medical condition (http://unesdoc.org/images/0014/001497/149722e.pdf in October 2011). Advances in antiretroviral therapy, improved medical care and prophylaxis of some of the initially fatal complications have resulted in longer and healthier lives for people living with HIV and AIDS (Cohen, 2002).

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However, many of such persons continue to experience numerous challenges beyond those posed by the physical effects of the disease including poverty, mental illness, drug addiction, social alienation and homophobia (http://cmellc.com/ psychcongress/syllabus/data/176-Forstein-Psychosocial_Input-WDL-BW.pdf). However, most of the studies investigating psychiatric morbidity in HIV and AIDS patients are from the United States and other developed parts of the world. The paucity of information on psychiatric morbidity among HIV positive patients in the underdeveloped world including Nigeria has motivated an interest in this study. Therefore, this study sought to investigate the occurrence of psychiatric morbidity and its associated socio-demographic and psychosocial factors in people living with HIV and AIDS in a tertiary hospital in the Niger Delta region of Nigeria.

Literature review

People living with HIV are at an incased risk of developing psychiatric disorders compared to the general population.

About half of all HIV infected persons' exhibit neuropsychiatric abnormalities (Saddock, 2003). These psychiatric complications may result from multiple stressors that can affect the mental health of people living with HIV and AIDS (http://thebaty.com/content/art30633.html). Such stressors often make mental adjustment difficult. Several models have been proposed for understanding the origins of the psychiatric conditions observed in the course of infection and illness from HIV. The background model suggests that a psychiatric disorder that preceded the HIV epidemic may emerge during the course of HIV disease. A previous history of a psychiatric disorder has been reported to be associated with the development of a current episode of psychiatric morbidity (Peng, 2010), Indeed, a past history of depression was identified as a significant risk factor for the development of psychiatric disorders in HIV positive men (Perkins, 1994). Comorbid substance use disorder and heavy alcohol use have also been reported to be a consistent predictor of psychiatric morbidity in HIV positive patients (Lyketsos, 1996 and Bing, 2004). Other risk factors that have been reported as being significantly associated with psychiatric morbidity in HIV patients include being in a HIV support group, death of a significant other from AIDS, limited education and knowledge of HIV and its transmission, living alone and premorbid neurological result (Freeman, 2007; Sayal *et al.,* 1997; Purcell, 2001). Female gender, poor family relations, a homosexual orientation, poor social support, adverse life events, older age of patients and premorbid intelligence have also been identified as risk factors for psychiatric morbidity in HIV infection[16]. However, the authors of these studies noted that most of the samples were from the United States and United Kingdom, involving Caucasian males of homosexual or bisexual risk behaviours, with medium-high educational status, and warned that results from these studies should be cautiously applied to populations of different demographic parameters.

MATERIALS AND METHODS

This was a two-stage cross-sectional comparative study that was conducted at the retro-viral disease clinic and the general outpatient department of the University Port Harcourt Teaching Hospital.

Materials

Subjects who consented to participate in the study were assessed using a pretested specially designed questionnaire to elicit socio-demographic and clinical variables including age, gender, sexual orientation, type of HIV infection, CD4 count and stage of HIV disease. The subjects were also screened for psychological distress with the 12 -item general health questionnaire (GHQ – 12). A cut off point of 3 was adopted, and scores of 3 and above was indicative of psychological distress. Such subjects, who were regarded as cases, were thereafter assessed for psychopathology by using the 10^{th} version of the present state examinations (PSE – 10). Symptoms from this instrument were then used to generate a diagnosis according to the definitions and criteria of ICD – 10.

Procedure

At the initial stage, a list of all the patients, attending both clinics was obtained from the medical records and this constituted the sampling frame. The sampling method adopted was systematic sampling technique (nth sample). The first patient to be interviewed was selected by balloting, and subsequent ones systematically of 1 in 5 until the quota was satisfied. Three hundred and fifty three subjects were recruited into two groups over a four month period. The first group (group A) was recruited from the retroviral disease (RVD) clinic of the University of Port – Harcourt Teaching Hospital and included all confirmed HIV seropositive patients who had no past histories of neurological or psychiatric disorders and who were not chronically ill. The second group (group B) ware recruited from the general outpatient department (GOPD) of the same hospital, and included all confirmed HIV seronegative patients without a history of a chronic medical or psychiatric disorder. Subjects in both groups were between the ages of 18-60 years and gave informed written consent to participate in the study.

Ethical Consideration

Permission for the study was obtained from the ethical committee of the University of Port-Harcourt Teaching Hospital to ascertain that the methodology of the study did not contravene laid down regulations for experiments involving human beings. Patients were duly informed, and the objectives of the study explained to them.

Statistical Analysis

Data was pre-coded to ensure accuracy and was analyzed using the 15^{th} version of the statistical package for social sciences (SPSS – 15). Tables were generated according to objectives and the t – test and analysis of variance (ANOVA) were used to analyze parametric variables, while the chi – square and fisher's exact test were used for non-parametric variables where applicable. For risk factors analysis, variables with significant association with psychiatric mobility during bivariate analysis were entered into the regression equation. A reference category was also entered to facilitate interpretation of odds ratios. All analyses were set at 0.05 level of significance two-tailed test.

RESULTS

This study assessed 241 subjects. Eighty nine of them were HIV positive and were receiving care at the retroviral disease clinic of the University of Port – Harcourt Teaching Hospital while 152 subjects were HIV negative and attended the general out-patient department of the same hospital for various minor ailments. Table 1 shows the socio-demographic characteristics of the respondents. According to the table, a higher proportion of the HIV patients were in the older age groups with a mean age of 37.6 + 9.5 years. The table also shows that a greater proportion of the patients were employed, currently married and were famales. The prevalence of HIV infection was observed to increase with increasing levels of education (X^2=1.78 p=0.18, X^2=2.07 p=0.15 and X^2=3.55 p=0.06 respectively). Table 2 describes psychosocial characteristics of the respondents. Significantly more HIV positive patients had at least a child (X^2 = 17.5, P<0.001) and used a condom for protection during sexual intercourse (X^2 = 6.99, P < 0.01) when comported to the controls. Also, a significantly higher proportion of HIV positive respondents denied a history of multiple sexual partners during the one month period before the interview (X^2 = 9.35, P = 0.00) and admitted to use of psychoactive substances (X^2 = 4.61, P = 0.03) relative to the controls.

Table 1. Sociodemographic Characteristics of the Patients and Comparison Group

Sociodemographic Characteristics	Patient N=89 n(%)	Control N=152 n(%)	x^2	P
Age (Years)				
18-27	12(13.5)	38(25.0)		
28-37	34(38.2)	61(40.1)	6.72	0.15
38-47	27(30.3)	30(19.7)		
48-57	11(12.4)	17 (11.2)		
58-67	5(5.6)	6(4.0)		
Gender				
Male	38(42.7)	84(55.3)	3.55	0.06
Female	51(57.3)	68(44.7)		
Religion				
Christianity	87(97.7)	148(97.4)	FE*	1
Non Christianity	2(2.3)	4(2.6)		
Employment Status				
Employed	57(64.0)	84(52.3)		
Non employed	32(36.0)	68(47.7)	1.78	0.18
Currently married	43(48.3)	59(38.8)		
Non currently married	46(51.7)	93(61.2)	2.07	0.15
Years of Education				
0-6	12(13.5)	14(9.2)	2.93	0.23
07-Dec	41(46.0)	41(46.0)		
>12	36(40.5)	78(51.3)		

*FE: Fishers Exact

Table 2. Psychosocial Characteristics of thr Respondents

Variable	Patient N=89 HIV+ n(%)	Control N=152 HIV+ n(%)	X^2	P
Children				
None	29(32.6)	92(60.5)	17.5	<0.001
At least one	60(67.4)	60(39.5)		
Living Arrangement				
Spouse	10(11.2)	12(7.9)	3.04	0.22
Family	60(67.4)	118(77.6)		
Alone	19(21.3)	22(14.5		
Sexual Orientation				
Homosexual	-	2(1.3)	-	-
Heterosexual/Bisexual	89(100)	150(98.7)		
Protection During Sexual Intercourse				
Protected	65(73.0)	85(55.9)	6.99	0.01
Not Protected	24(27.0)	67(44.1)		
Multiple Sexual Partners				
Yes	3(3.4)	25(16.4)	9.35	0.00
No	86(96.4)	127(83.6)		
History of Sexual Transmitted Infection				
Yes	25(28.1)	32(21.1)	1.54	0.21
No	64(71.9)	120(78.9)		
Psychoactive substance use				
Yes	29(32.6)	71(46.7)	4.61	0.03
No	60(67.4)	81(53.3)		
Family History of Psychiatric disorder				
Yes	6(12.3)	16(10.5)	0.97	0.32
No	83(87.7)	136(89.5)		

Table 3. Sociodemographic Correlates of Psychiatricm Morbidity in HIV

Variable	Psychiatric morbidity present N=21 n(%)	Psychiatric morbidity absent N=68 n(%)	X^2	Pvalue
Age				
18-27	2(16.7)	10(83.3)		
28-37	9(26.5)	25(73.5)	0.77	0.9
38-47	7(25.9)	20(74.1)		
48-57	2(18.2)	9(81.8)		
58-67	1(20.0)	4(80.0)		
Gender				
Male	5(13.2)	33(86.8)		
Female	16(31.4)	35(68.6)	4.01	<0.05
Religion				
Christian	21(24.1)	66(75.9)	--	--
Islam	--	2(100)		
Years of Education				
0-6	4(33.3)	8(66.7)		
7-12	12(29.3)	29(70.7)	3.28	0.2
>12	5(13.9)	31(86.1)		
Employment Status				
Employed	11(19.3)	46(80.7)		
Not employed	10(31.3)	22(68.7)	1.62	0.2
Marital Status				
Presently Married	9(20.9)	34(79.1)		
Presently not	12(26.1)	34(73.9)	0.33	0.6

A higher proportion of the HIV positive patients lived alone (X^2 = 3.04, P = 0.22), admitted to a past history of sexually transmitted infection (X^2 = 1.54, P = 0.21) and a family history of a psychiatric disorder (X^2 = 0.97, P = 0.32) in relation to the controls, but these observed differences did not attain statistical significance. Table 3 shows the socio-demographic correlates of psychiatric morbidity in HIV. The table has shown a significant female preponderance in the prevalence of psychiatric morbidity. There was also a higher prevalence of psychiatric morbidity among the unemployed relative to those who were employed, among the single, separated or widowed compared to those who were married and among those with less than seven years of education relative to those that had higher levels of education. However, these observed differences did not attain statistical significance. The table further shows that psychiatric morbidity was most prevalent in patients within the age group 28 – 37 years compared to other age groups, but this difference was not statistically significant.

protection during sexual intercourse when compared to those who protected themselves during sexual intercourse. Also, patients who were members of a support group had a higher prevalence of psychiatric morbidity relative to those who did not belong to such a group. However, this finding was not of statistical significance.

DISCUSSION

This study provides information about the socio-demographic and psychosocial correlates of psychiatric morbidity in HIV positive patients attending the retroviral disease clinic of the University of Port – Harcourt Teaching Hospital Nigeria. This study observed a significant female preponderance among the HIV population with psychiatric morbidity. This finding is in keeping with reports from previous studies (Gallego, 2000). The larger surface area of the female genital tract and its increased vulnerability to cuts and excoriations compared to

Table 4. Psychosocial Correlates of Psychiatric Morbidity in HIV

Variable	Psychiatric morbidity present N=21m n(%)	Psychiatric morbidity absent N=68 n(%)	X^2	Pvalue
Number of children				
None	6(20.7)	23(79.3)	0.2	0.65
At least one	15(25.0)	45(75.0)		
Living arrangement				
Alone	6(31.6)	13(68.4)		
Spouse/family	15(21.4)	15(21.4)	0.85	0.36
Sexual Orientation				
Homosexual	21(23.6)	68(76.4)		
Heterosexual	--	--		
Bisexual	--	--	--	-
Protection in sexual Activity in last month				
Protected	15(23.1)	50(76.9)		
Unprotected	6(25.0)	18(75.0)	0.04	0.85
Multiple sex partners				
Yes	3(100)	--	--	--
No	18(20.9)	68(79.1)	--	--
Psychoactive drug use				
Yes	6(20.7)	23(79.3)		
No	15(25.0)	45(75.0)	0.2	0.65
Presence of formal Social support[a]				
Yes	7(58.3)	5(41.7)	9.28	0.002
No	14(18.2)			
Members of any Support group [b]				
Yes	2(66.7)	1(39.3)	FE*	0.14
No	19(22.1)	67(77.9)		
Disclosure to anyone else				
Yes	20(24.7)	61(75.3)	0.6	0.44
No	1(12.5)	7(87.5)		
Knowledge of HIV mortality				
Yes	11(31.4)	24(68.6)	1.96	0.16
No	10(18.5)	44(81.5)		
Positive partner				
Yes	6(20.7)	23(79.3)	0.2	0.65
No	15(25.0)	45(75.0)		

a Availability of emotional, educational, financial and other help from family, or group that provides such for HIV positive persons.
b Any agency (government or non-governmental) that provides social support to people living with HIV/AIDS.
*FE= Fisher's Exact.

Lastly, table 4 shows the psychosocial correlates of psychiatric morbidity in HIV patients. According to the table, the only significant determinant of psychiatric morbidity was the presence of organized social support. The table also shows that there was a higher prevalence of psychiatric morbidity among patients that had at least one child relative to those that had no children, among those who lived alone compared to patients that lived with a family member. However, these observations were not of statistical significance. Psychiatric morbidity was also observed to be more prevalent in patients who had multiple sexual partners and did not use condoms for the male genital tract may account for a higher prevalence of HIV infection and psychiatric morbidity in this group of patients. The results from this study may also support the notion that females are more willing to seek medical help earlier than males who are more likely to engage in maladaptive coping strategies such as increased psychoactive substance use (Joint United Nations program on HIV/AIDS (UNAIDS) report on global AIDS epidemic, 2006). The results of this study also indicate that HIV infection was more prevalent in patients aged 28-47 years. This finding is similar to the report of the United Nations on the global AIDS

epidemic (Joint United Nations program on HIV/AIDS (UNAIDS) report on global AIDS epidemic, 2006). A high proportion of the patients in this study were in employment. This finding is contrary to previous studies which report a high prevalence of unemployment in HIV positive persons (Lyketsos, 1996 and Atkinson, 1998). Adherence to antiretroviral mediations and regular attendance at the retroviral disease clinic for treatment is likely to ensure that patients remain healthy and are able to function in their respective professional roles. Also, relatively high level of education was observed among the patients in this study. This may signify a high level of enlightenment and understanding to seek medical intervention for their physical symptoms. This study also found that a higher proportion of HIV patients were married during the study period. This finding is contrary to reports of previous studies (Sayal, 1997 and Purcell 2001). This finding may reflect the effectiveness of the HIV/AIDS campaign programs in Nigeria with consequent low levels of stigma against this population. Thus enabling them to achieve and maintain a marital status. More than three-quarters of the patients in this study lived with their spouse, children or a family relative. This observation differs from that of other studies which found that living alone and weak family ties were prevalent among persons living with HIV/AIDS (Catalan, 1998; Chandra, 1998 and Chuang, 1991). The typically strong family ties and well established extended family system in the African cultural setting may account for the increased number of HIV patients living with a family member. Such a situation may also provide a formidable source of emotional support for such persons. A higher proportion of these patients also had at least one child. This may be adduced to the fact that a higher proportion of the patients were married and fulfilling their family roles during the study period.

This study also found that a greater proportion of the patients engaged in safe sexual practices by using condoms during sexual activity. It was also observed that a higher proportion of the HIV patients in this study admitted to a family history of psychiatric disorders. While this was not a significant association, it may suggest a genetic role for the development of psychiatric morbidity in HIV positive patients. More than four-fifths of the patients in this study had not been receiving any form of social support. Paradoxically, a significantly higher prevalence of psychiatric morbidity was reported in patients that had social support. While Freeman et al, (Catalan, 1998), reported a similar finding, this contradicts the reports from other studies (Elkim, 2008 and Musisi, 2009). A potential explanation for this finding may be that good social support enhanced seeking medical intervention. Moreover, the larger proportion of these patients sought medical attention because of ill-health.

This study also found that although about two of every five HIV patient had knowledge of a HIV related death, such knowledge was not significantly associated with the presence of a psychiatric morbidity. This suggests that the psychological dimensions to HIV may be as a result of personal concerns and issues rather them HIV related mortality. This study did not find a significant association between psychoactive substance use and psychiatric morbidity in HIV patients. The provision of regular and comprehensive health education by the treatment team at the study centre on positive living, drug adherence, avoidance of psychoactive substances, avoidance of sexual transmission risk behaviors and improved nutrition could have played a role in the resultant lower frequency of use of psychoactive substances in this patient group. The present study also shows that a higher proportion of the patients with psychiatric morbidity admitted to histories of multiple sexual partners. Although this variable could not be analyzed for a significant association with psychiatric morbidity, it may further support the suggestion that sexual transmission is the major route of HIV transmission in this environment and in most of sub-Saharan Africa. Previous studies have reported homosexuality as a risk factor for psychiatric morbidity in HIV patients (Gallego, 2000; Gilman, 2001 and Benotsch, 1999). This study found that among the HIV positive patients, homosexuality was not reported. This finding may reflect cultural bias to homosexuality which is regarded as a taboo in this part of the world. Hence even when present, the fear of stigma and societal rejection may discourage persons from admitting to such behaviour (www.semgal.free.fr/doc_et_pdf/ africa_A4. pdf and www.emedicine.medscape.com/aeticle/ 293530-overview#aw2aab66b).

Limitations

This study was limited by a number of factors such as;

- This was a hospital based study. A community based survey would have given a better representation of the general population.
- The cross-sectional nature of this study does not permit causal inferences. A longitudinal study may provide a better evaluation of psychiatric problems in this group of patients.

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REFERENCES

Atkinson, Jr J. H., Grant, I., Kennedy, C. J. 1998. Prevalence of psychiatric disorders among men infected with HIV: a controlled study. *Arch Gen Psychiatry*, 45(9): 859-64.

Benotsch, E. G., Kalichman, S. C., Kelly, J. A. 1999. Sexual compulsivity and substance use in HIV seropositive men who have sex with men: prevalence and predictors of high risk behavior. *Addictive behaviours*, 24(5): 857-868.

Bezemor, P. H., Bienenfeld, D. 2011. Homosexuality. Retrieved from www.emedicine.medscape.com/aeticle/ 293530-overview#aw2aab66b in 2011.

Bing, E. G., Burnam, M. A. 2004. Psychiatric disorder and drug use among human immunodeficiency virus infected adults in United States. *Arch Gen Psych*, 721-728.

Catalan, J., Kimmes, I., Day, A., Garrad, A. 1998. Factors associated with psychiatric morbidity in HIV infection. *Int Conf AIDS,* 8: B218.

Chandra, P. S., Ravi, V., Desia, A. 1998. Anxiety and depression among HIV infected homosexuals- a report from India. *J Psychosom Res.,* 45(5): 401-9.

Chuang, H., Jason, G., Pajurkova, E. 1992. Psychiatric morbidity in patients with HIV infection. *Can J Psychiatry*., 37: 109-15.

Cohen, M. A., Hoffman, R. G., Cromwell, C., Schmeidler, J., Ebrahim, F., Alfonso, C. A. et al. 2002. The prevalence of

distress in persons with human immunodeficiency virus infection. Psychosomatics, 43: 10-15.

Elkim, E. 2009. Mental health online. Available from http://thebaty.com/content/art30633.html assessed on 4th February.

Forstein, M. Psychosocial aspects of HIV/AIDS. Presented at the US Psychiatric Congress Las Vegas. Retrieved from http://cmellc.com/psychcongress/syllabus/data/176-Forstein-Psychosocial_Input-WDL-BW.pdf

Freeman, M., Nkomo, N., Kafaar, Z., Kelly, K. 2007. Factors associated with prevalence of mental disorders in people living with HIV/AIDS in South Africa. AIDS care, 19(10): 1201-9.

Gallego, L., Gordillo, V., Catalan, J. 2000. Psychiatric and psychological disorders associated with HIV infection. AIDS Rev, 2: 48-60.

Gilman, S. E., Cochrane, S. D., Mays, V. M. 2001. Risk of psychiatric disorders among individuals reporting same sex partners in the national community survey. *American J Pub Health,* 91(6): 922-939.

Joint United Nations program on HIV/AIDS (UNAIDS) report on global AIDS epidemic. May 2006.

Kessler, R., McGonagle, R., Zhao, S. 1994. Lifetime and 12 month prevalence of DSM IIIR psychiatric disorders in the United States. *Arch Gen Psychiatry,* 51: 8-19.

Lyketsos, C. G., Hutton, H., Fishman, F., Schwartz, J., Treisman, G. J. 1996. Psychiatric morbidity on entry to an HIV primary care clinic. AIDS, 10: 1033-1039.

Murray, S. O. Homosexuality in 'traditional' sub African and contemporary South Africa. Retrieved from www.semgal.free.fr/doc_et_pdf/africa_A4.pdf

Musisi, S., Kinvanda, E. 2009. Emotional and behavioural disorders in HIV seropositive adolescents in urban Uganda. *East Afri Med J.,* 86(1): 16-24.

Peng, E. Y., Lee, M., Morisky, D. E., Yeh, C., Farabee, D., Lan, Y. et al. 2010. Psychiatric morbidity in HIV infected male prisoners. *J Formos Med Assoc.,* 109(3): 177-184.

Perkins D O, Stern R A, Golden R N. Mood disorders in HIV infection: prevalence and risk factors in a non-epicenter of the AIDS epidemic. Am J Psychiatry 1994; 151(2): 233-6.

Purcell, D. W., Britton, J., Halkitis, P. N. 2001. Substance use and sexual transmission risk behavior of HIV positive men who have sex with men. *Journal of substance abuse*, 13(12): 185-200.

Saddock, B. J., Saddock, V. A. 2000. Comprehensive Textbook of Psychiatry (2 volume set), Lippincott Williams and Wilkins Publishers 7th edition.

Saddock, B. J., Saddock, V. A., Kaplan and Saddock's 2003. Synopsis of Psychiatry, 9th edition, Chapter 11, Neuropsychiatric aspects of HIV/AIDS, p 374-382.

Sayal, S. K., Singh, H., Chatterjee, M. 1997. High risk behavior and psychiatric morbidity in HIV positive intravenous drug users (report of 2 cases). Venereol Leprol 64: 75-7.

Wells, K., Gokding, J., Burnam, M. 1998. Psychiatric disorders in a sample of the general population with and without chronic medical conditions. *Am J Psych,* 145: 976-981.

World Health Organization. Human immunodeficiency virus and quality of life group 2002 documents retrieved from http://unesdoc.org/images/0014/001497/149722e.pdf in October 2011.

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