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Psychiatric and Psychological Disorders associated to HIV Infection

Lucía Gallego[1], Victoria Gordillo[1,2], and José Catalán[3]

[1]Psychology & Psychiatry Unit, Hospital Carlos III
[2]University Complutense, Madrid, Spain[3]
Psychological Medicine Unit, South Kensington & Chelsea Mental Health Centre, London, UK

Abstract

The prevalence of principal psychiatric and psychological syndromes associated with HIV infection is described. Studies about psychiatric morbidity and emotional distress were evaluated systematically, in order to provide an accessible source of information.
HIV-infected patients have a high lifetime rate of psychiatric and psychological disorders. Findings regarding current psychiatric diseases in HIV-positive and negative groups are varied, but most studies have suggested that the incidence of affective disorders is greater than expected for the general population. The wide range of prevalence values reported could be explained by differences in measurement tools, sample recruitment and selection, stage of HIV infection and sociodemographic and geographic features between studies.
There is a high risk of psychiatric and psychological disorders among HIV-infected individuals. Early diagnosis and treatment could remarkably improve quality of life in this group of patients.

Key words

Psychiatric morbidity. Psychological disorders. HIV infection.

Introduction

Despite the impressive reduction in morbidity and mortality related to HIV infection, and due to the consequent increase in life expectancy gained, important physical, psychosocial and psychiatric repercussions of this disease are expected to become more relevant. For these reasons, a multidisciplinary approach, with several specialities involved in counselling and treatment, should become relevant in HIV/AIDS management.

Correspondence to:
Lucía Gallego
Psychology & Psychiatry Unit
Service of Infectious Diseases, Hospital Carlos III
Instituto de Salud Carlos III
C/ Sinesio Delgado 10
28029 Madrid
Spain

From the beginning of this disease up to the present time, the psychosocial aspects as well as psychological/psychiatric disorders affecting HIV-infected individuals have become a major concern for professionals taking care of these patients[1-8]. Many researchers aimed to establish the predictors and frequency with which psychological problems appeared. It was first noticed that it is very common for a substantial proportion of subjects to suffer persistent and pathological disturbances. Psychiatric morbidity was defined by the presence of a DSM-IV (or equivalent in ICD-10) diagnostic code reflecting psychiatric illness.

However, most studies in the beginning of the epidemic referred to psychiatric morbidity and emotional distress in HIV-infected patients during hospitalisation[9-12], or after ambulatory consultation[13]. Data obtained in such studies could be over-

estimating the real prevalence of mental disorders in subjects previously selected by another physician. As most HIV-infected subjects in developed countries receive medical assistance sometime during the natural history of the disease, the best way to have an accurate measure of psychiatric and psychological sequelae is to study the population attending these services[14].

Nowadays, it has been pointed out the important role being played by mental health specialists in the prevention and treatment of several complications of HIV infection. Their field of action has been indicated as: i) to identify and modify behavioural factors related to the acquisition of the infection or affecting the course of the disease, ii) to describe the significance and inner consequences of HIV/AIDS diagnosis, and iii) to determine the usefulness of interventions aimed to alleviate the psychiatric implications of these aspects. The term counselling, which is much used by clinical psychologists and psychiatrists in the context of HIV infection, involves these activities[15].

The most important investigations dealing with the psychiatric and psychological morbidity associated to HIV infection are reviewed, paying attention not only to their main findings, but also to their intrinsic limitations.

Mental disorders in HIV-infected patients

It is well known that subjects suffering severe organic diseases are burdened by a higher prevalence of mental disorders, which could rise to 30-50%. Most diagnoses are combined affective disorders, mainly with anxiety and depressive symptoms, which are frequently linked to adjustment problems. Few such patients need prolonged psychopharmacological treatment[16-17].

Due to the prolonged life expectancy achieved by the newer antiretroviral regimens, the risk for mental disorders in HIV-positive patients is in the range of individuals suffering different chronic conditions[18], although significantly higher than that described for the general population (15.4-30%)[19,20]. Also, these complications vary in type and severity.

It is important for mental disorders to be promptly diagnosed among HIV-infected individuals. This morbidity might spoil the efforts carried out at primary prevention and frequently diminishes coping capacity. Also, it is associated with higher mortality[21] and lower antiretroviral treatment compliance[22-25], and causes severe impairment of the quality of life among HIV-infected individuals[26-27].

Among HIV-infected patients, psychiatric evaluation should be made in the wide context of a multisystemic disease, not only with an ample variety of psychopathologies, but also with organic alterations and drug toxicities, frequently leading to the impairment of the superior functions of the brain. Psychiatric symptoms may be difficult to differentiate from some manifestations of AIDS. These facts make psychiatric syndromes diagnosis in HIV-positive patients troublesome. Physicians may also erroneously view psychiatric symptoms as a 'natural' reaction to HIV diagnosis, which sometimes leads to the appropriate psychological or psychiatric treatment not being aggressively pursued.

Dementia and minor cognitive impairment

A proportion of HIV-infected persons can develop brain disorders, not only from secondary complications but also by direct effect of the HIV. Primary HIV-related brain disorders include HIV-associated dementia or AIDS dementia complex (ADC) and, to a lesser degree, cognitive impairment, the HIV-associated minor cognitive disorder (MCD)[28] .

HIV-associated dementia is characterised by marked impairment in cognitive functioning, involving the ability to observe, concentrate, memorise and quickly and flexibly process information. Marked disturbances in language abilities and psychomotor slowing are also observed[29-30].

The prevalence and severity of AIDS associated dementia is related to the rate of immunosupression and disease stage. The prevalence of this complication has been set at between 6,5 and 20%[31-33]. In 3 to10% of patients, dementia is the first AIDS-defining diagnosis[33-34].

Before fulfilling dementia diagnostic criteria, cognitive impairment is detected in up to 50% of AIDS patients. There is no agreement on the frequency, type and intensity of neuropsychological test alterations in asymptomatic HIV-infected patients[33,35-36]. However, neuropsychological deterioration seems to parallel with CD4+ lymphocyte reduction, which has been recently shown to be a better marker than viral load for cognitive impairment[37].

A reduction in the incidence of ADC should be expected with the widespread use of HAART, but its impact on the incidence and clinical course of this complication is still unclear. Controlled studies have reported a positive effect of antiretroviral treatment on the impairment of neuropsychological tests in ADC[38-40]. Once antiretroviral treatment has been started, the reduction of plasma viral load is the parameter which best correlates with the regression of neuropsychological test abnormalities[41-42].

Finally, there is some evidence that psychiatric disturbances in symptomatic HIV infection may be associated with subtle brain involvement preceding the immunological and neurocognitive impairment characteristic for AIDS[43].

Acute stress reactions

Acute stress reactions may occur in any phase of HIV infection, especially in coincidence with changes in the individual clinical stage[28]. However, they are more common immediately after the diagnosis of the infection. These emotional reactions may include anger, guilt, fear, denial and despair. In many cases somatic symptoms, suicidal ideation, or even attempts, substance abuse and high-risk activities are associated[2]. The management of psychological reactions to the diagnosis of HIV infection is based on pre- and post-test counselling[44]. The prevalence of these reactions has not been established.

Adjustment disorder

The clinical picture of adjustment disorders may be dominated by symptoms of anxiety, insomnia and depression.

Adjustment disorders, which normally follow a benign course, are rather frequent (4-10%)[45-47] and constitute one of the most common diagnoses in people referred to mental health services (around 30%)[10].

Affective Disorders

Major depression has been frequently reported in subjects with HIV infection, but estimates concerning its prevalence have been quite divergent. Lifetime rates for depressive disorders among HIV-infected persons have been set at 30-61%[45,46,48-57], while the current prevalence of major depression in community samples is a little lower (4-40%)[45-63]. When hospitalised patients are considered, these rates may be much higher. Suicidal ideation is common among HIV-infected persons and may be associated with increased HIV-related symptoms. For this reason, some studies have concluded that this disease is burdened with a higher suicide risk than the general population[64-67]. Mania is the most frequent diagnosis for the psychiatric hospitalisation of HIV-infected subjects, and often secondary to HIV-infection[68]. Most cases of new-onset mania occur in advanced HIV disease and they are often associated with the presence of substantial cognitive impairment[28]. No satisfactory prevalence or incidence data are available, but overall, manic conditions appear to be rare. Antiretroviral agents capable of penetrating the central nervous system have been shown to be effective for the prevention of manic reactions[69].

Anxiety disorders

Episodes of anxiety lasting for one to several months are frequent in HIV-infected patients. Its prevalence is significantly lower if rigorous DSM-IV criteria are applied, which require a minimum of 6 months of symptoms. This could be the reason why there is a wide range of results in different studies (4-40.5%)[45,46,48-57]. Current rates of generalised anxiety are between 5[51] and 20%[50]. The rates of other major anxiety disorders, such as panic and obsessive compulsive disorders, do not appear to be markedly elevated above community standards.

Substance and/or alcohol use disorder

Lifetime rates for alcohol use disorder are in the range of 21.6 to 64.3%, and for drug use disorders from 29.4 to 55.9%[45,46,48-57]. Co-morbidity with other mental disorders is common[46]. The prevalence of any current substance use disorder, including chronic alcohol and drug use, has been set at 20 to 73%[45-57,71]. Physicians should be aware that substance abusers are prone to have sexual behaviours at risk for HIV transmission, as there is a higher rate of sexual dis-inhibition, impaired judgement and impulsivity. For these same reasons they tend to be less compliant with antiretroviral regimens.

Other mental disorders

Sexual dysfunction is very common (39-59%)[45,72-75], and comprises in almost all cases hypoactive sexual desire disorder (97%)[45]. Other frequent sexual dysfunctions in seropositive subjects are ejaculatory difficulties[75]. Psychotic disorder is found most often in late stage disease, with a prevalence rate of 0.2-15%[76-79]. Most psychosis are either mania or brain organic disorders. Personality disorders is often an associated diagnosis which can be made in up to 30% of HIV-positive subjects. Borderline personality disorder, antisocial, dependent, passive-aggressive, histrionic and otherwise unspecified disorders, are the most frequent diagnoses[54,80-82]. Also, eating disorders can complicate the management of HIV infection[83].

Prevalence of any mental disorder

The appearance of at least one lifetime mental disorder has been found to occur in 38 to 73% of the patients[45,48,51,71]. In the majority of cases the onset of psychiatric disorders seems to precede seroconversion[46].

It is not known whether psychiatric disorders might enhance the acquisition of HIV infection, nor if their effective treatment might reduce the risk of HIV acquisition.

The findings regarding current psychiatric diseases in HIV-positive and negative groups of patients are varied, but most studies have suggested rates of affective disorders and substance abuse of around 50%, which are greater than expected for the general population[58,84].

Factors and predictors associated with the development of mental disorders in HIV-infected subjects

Several factors have been shown to facilitate psychiatric morbidity, which makes mental health evaluation of special relevance in order to promptly identify susceptible individuals, so that effective interventions can be provided.

Psychiatric history

Psychiatric history prior to HIV infection acquires great relevance[85-87]. The clinicians should be well informed of a patient's past psychiatric history in order to be in a strong position to detect subtle presentations of recurrence, and to begin effective intervention before a crisis emerges.

HIV infection is more prevalent among populations known to be at higher risk for mental disorders, such as subjects with homosexual practices[51,80,88-89] or intravenous drug users[46,49,70,90]. The most frequent diagnoses in homosexual men are major depression and substance abuse, especially alcohol use disorder. On the other hand, between

48 and 90% of opioid-dependent patients have a co-morbid psychiatric disorder[19,70]. Psychiatric disturbances mostly associated with substance abuse and a higher risk for HIV infection include bipolar disorder, schizophrenia, schizoaffective disorders, borderline and antisocial personality disorders, and depression.

Also, patients acquiring HIV infection through blood transfusion, such as haemophiliacs, tend to be at risk for psychiatric morbidity derived from the chronicity of the hereditary disease, high level of hospital dependency and sometimes activity-limited life style. On the other hand, subjects affected by severe mental disorders, heavy alcohol abusers and homeless individuals, have been recently identified as being at greater risk for HIV infection[91-95].

The presence of personality disorders also increases the risk of psychological problems after HIV infection[96].

HIV associated factors

The communication of HIV positivity inflicts a deep psychological impact[97], which can drive the patient to different emotional responses. Of special relevance is AIDS diagnosis, or the appearance of physical, disfiguring or disabling symptoms[98-100].

In other instances, mental disorders could be caused by the direct action of HIV, opportunistic pathogens or tumours affecting the central nervous system, by the toxicity of antiretroviral drugs, antibiotics or chemotherapy, or by multiple complications of end-stage disease. However, it is always possible for a psychiatric diagnosis to be made concurrently with, but not directly related to, HIV infection.

Psychosocial aspects

Poor social support and the use of avoidance or denial as a habitual way of coping, are factors related negatively to disease adaptation, but positively to psychiatric morbidity[101]. Other factors associated to the development of significant psychiatric and psychological sequelae are life events[102], in particular adverse ones that can be associated with an increased rate of early HIV disease progression[103] and exposure to grief due to AIDS[104].

Sociodemographic characteristics

Personal and demographic characteristics such as older age, pre-morbid IQ, educational attainment, female gender, low income and ethnicity[71,105-108] are also associated with psychiatric morbidity.

Research about mental disorders in HIV-infected patients

A large number of relevant researches on psychological and psychiatric disturbances in HIV-positive subjects have been published from the beginning of the epidemic to the present time[109].

The principal findings from relevant publications on psychiatric morbidity are summarised in Table 1. Due to the high number of publications found, only studies with population samples greater than 70 patients, with seronegative control groups, and those evaluating any axis I psychiatric disorders with operative diagnostic criteria, structured diagnostic interview and valid instruments for diagnosis, have been selected.

A wide diversity of results with regard to the incidence of emotional distress, at evaluation time point and lifetime, have been offered by different studies exploring issues related to psychiatric morbidity in HIV-infected individuals. For this reason, it is important to consider differences among studies before drawing firm conclusions.

Methodological problems

The diversity in the prevalence rates of several mental disorders reported in the studies reviewed should be considered in the context of the heterogeneous methodology used.

Most population samples were selected through advertisements, mail solicitations and by word of mouth, resulting in self-referred cohorts, rather than cohorts established from a known sampling frame[49-52,54,56].

Another aspect of interest is the cohort of patients selected for the studies. To date, the vast majority of the literature refers to series from the United States of America and the United Kingdom, where samples are mainly constituted by Caucasian males, with homosexual or bisexual risk behaviours, and medium-high educational levels. This fact means that the results obtained in currently used studies should be cautiously applied to populations where those demographic parameters are different.

Only one study has examined the effects of HIV infection on neuropsychological functioning in an African population[62]. In another study, promoted by the World Health Organisation, HIV-infected patients and controls were recruited from different geographic locations, cultural levels and social strata, in an attempt to avoid sample selection bias[53].

When intravenous drug users are mainly considered in HIV research, the selection of this sample might induce a high prevalence of substance abuse by design. In this respect, studies of homosexual men have also shown elevated prevalence of substance abuse and alcohol disorder. For example, Rosenberger *et al.*[46] reported prevalences of 55-73% for any substance abuse disorder and 42-62% for alcohol dependence.

Series referring to haemophiliacs[86,110], subjects with heterosexual risk behaviours[111], or the comparison between male and female morbidity, are scarce. HIV-infected women have received little attention[60,112], although it is known that they are placed at a greater risk for psychosocial difficulties[113].

It does not always include a control group of seronegative individuals[48,84], and should it happen, the prevalence of mental disorders is frequently

Table 1. *Studies about psychiatric morbidity in HIV-infected patients.*

STUDY	DESIGN & SAMPLE	HIV STAGE	EXCLUSION CRITERIA	PSYCHIATRIC MEASURES	CONCLUSIONS
Atkinson *et al.* (1988)	Cross-sectional 78 subjects (gay men and heterosexual controls)	(CDC, 1987) 1. AIDS: 15 2. ARC:13 3. Asymptomatic: 17 4. Homosexual HIV-: 11 5. Heterosexual HIV-: 22	1. Not independent ambulatory existence 2. No exacerbation of AIDS or intercurrent illness 3. Not English speaking	1. Diagnostic Interview Schedule (DIS) using DSM-III 2. Symptom Checklist 90- Revised (SCL-90-R) 3. Profile of Mood States (POMS)	Significant elevated lifetime and 6-month rates of major psychiatric disorders (generalised anxiety disorder and major depression) in HIV-infected and seronegative homosexual men
Williams *et al.* (1991)	Prospective 208 homosexual men	(CDC, 1987) 1. Asymptomatic: 49 2. Mild symptoms: 29 3. ARC: 49 4. Seronegatives: 84	1. < 18 or > 60 years 2. Having self administered parenteral drugs more than 10 times since 1981 3. AIDS 4. Not know their serologic status at least 1 month before	1. SCID for DSM-III-R 2. Global Assessment of Functioning (GAF) 3. Hamilton Anxiety Rating Scale (HARS) 4. Hamilton Depression Rating Scale (HDRS) 5. Brief Symptom Inventory (BSI)	1. Low rates of current depressive and anxiety disorders in homosexual men with and without HIV infection 2. High lifetime prevalence for depressive and substance abuse/dependence disorders
Brown *et al.* (1992)	Prospective 442 men from US Air Force	(Walter Reed Stanging System, 1986) 1. WR stage 1: 138 2. WR stage 2: 190 3. WR stage 3: 30 4. WR stage 4: 15 5. WR stage 5: 52 6. WR stage 6: 17	1. < 18 or > 44 years	1. SCID for axis I and II for DSM-III-R 2. HARS, HDRS, POMS 3. GAF, SCL-90-R 4. Beck Depression Inventory (BDI) 5. State Trait Anxiety (STAI)	1. High prevalence of current psychiatric diagnosis, especially mood and anxiety disorders 2. High lifetime prevalence of mood disorders, alcohol use disorder and psychoactive substance use disorder 3. Very high prevalence of current sexual dysfunction
Catalan *et al.* (1992)	Cross-sectional 73 men with haemophilia	(CDC, 1987) 1. HIV+: 37 2. Seronegatives: 36		1. Present State Examination (PSE) 2. POMS 3. Beck Hopelessness Scale 4. Self-Esteem Scale	1. Seropositive subjects had significantly worse total PSE scores and had higher levels of hopelessness 2. Symptomatic HIV+ subjects had higher depression levels than seronegative subjects
Chuang *et al.* (1992)	Cross-sectional 173 subjects, predominantly homosexual	(CDC, 1987) 1. Asymptomatic: 47 2. ARC: 57 3. AIDS: 40 4. Seronegatives: 29		1. Semi-structured interview (DSM-III-R) 5. POMS 6. Beck Hopelessness Scale (BHS)	1. Higher current rates of axis I disorders and adjustment disorders among HIV+ compared with HIV- subjects 3. Higher current rates of organic mental disorder among AIDS subjects

Table 1. *(Continued)*

STUDY	DESIGN & SAMPLE	HIV STAGE	EXCLUSION CRITERIA	PSYCHIATRIC MEASURES	CONCLUSIONS
					4. No difference in distress measures among the groups
Gala *et al.* (1993)	Cross-sectional 438 intravenosus drug users (IDU) gay men, and heterosexuals	(CDC,1987) 1. Stage II or III: 279 2. HIV-: 59		1. Semi-structured Interview (DSM-III-R) 2. SCL-90-R 3. Zung Self-Rating Anxiety Scale (ZSAS) 4. Zung Self-Rating Depression Scale (ZSDS)	1. HIV+ subjects did not have worse current or past psychiatric morbidity than controls 2. IDU had the highest levels of psychological morbidity, both past and present regardless of HIV status, followed by gay men 3. Life events and past psychiatric history were related to psychological morbidity
Fell *et al.* (1993)	Prospective 102 homosexual and bisexual men	(CDC,1993) 1. Asymptomatic: 69 2. Symptomatic: 7 3. HIV-: 26 *10 patients changed their serostatus in the second visit		1. Clinical Interview Schedule (CIS) 2. BDI 3. STAI	1. Differences in mood state and psychiatric assessment between the symptomatic and the other 2 groups 2. No differences between the asymptomatic and the seronegative groups 3. Risk factor: Psychiatric history
Rosenberger et al. (1993)	Prospective 197 homosexual or bisexual men	(CDC,1987) 1. Asymptomatic: 102 2. Stage IV: 64 3. HIV-: 31	1. History of intravenous drug use 2. Were referred for the express purpose of psychiatric or medical care	1. SCID for DSM-III-R 2. Family History Research Diagnostic Criteria 3. Detail Substance Use Interview 4. GAF 5. SCL-90-R 6. Sickness Impact Profile	1. High rates of lifetime psychiatric disorders in both HIV+ and HIV- homosexual men (especially substance abuse and affective disorder). Multiple diagnosis are common 2. Low rates of current disorder without differences between groups 3. Risk factor: Positive family history of psychiatric diagnoses
Perkins *et al.* (1994)	Prospective 169 homosexual men	(CDC,1987) 1. Asymptomatic: 98 2. HIV-: 71	1. < 18 or >50 years old 2. Had significant medical illness or CNS disorders. 3. Treatment with antiretroviral medication 4. Had a history of heavy alcohol or drug use	1. SCID for DSM-III-R 2. HDRS, HARS 3. POMS	1. Prevalence of mood disorders was similar between asymptomatic HIV+ and HIV- 2. High prevalence of lifetime and past month major depressive disorder in both groups 3. Current and lifetime prevalence of anxiety disorders was low in both groups

Table 1. *(Continued)*

STUDY	DESIGN & SAMPLE	HIV STAGE	EXCLUSION CRITERIA	PSYCHIATRIC MEASURES	CONCLUSIONS
Maj *et al.* (1994)	Prospective 955 homosexual or bisexual, IDU, blood recipients subjects (Thailand, Zaire, Germany, Kenya, Brazil)	(CDC, 1987) 1. Asymptomatic: 353 2. Stage IV: 304 3. HIV-: 298	1. < 18 years of age 2. Not able to read a series of 10 numbers or able to count from one to 25	1. Composite International Diagnostic Interview for ICD-10 and DSM-III-R (CIDI) 2. Brief Psychiatric Rating Scale (BPRS) 3. Montgomery-Asberg Depression Rating Scale (MADRS)	1. Some behaviours at risk for HIV-1 infection are associated with high rates of psychiatric syndromes 2. Prevalence of current mental disorders was significantly increased in symptomatic HIV+ 3. Significantly higher mean global scores on the MADRS where found in all centres in physically symptomatic HIV+ subjects Lip-
sitz *et al.* (1994)	Cross-sectional 223 IDU	(Physician rated scale; CDC, 1987) 1. No-AIDS: 124 2. HIV-: 99	1. People with AIDS	1. SCID for DSM-III-R 2. SCL-90-R 3. GAF	1. High prevalence of current major depression in both HIV+ and HIV- IDU 2. Other psychiatric diagnoses were infrequent 3. Women reported high levels of psychological distress 4. Positive association between HIV serostatus and a diagnosis of depression in men
Johnson *et al.* (1995)	Prospective 162 homosexual men	1. No-AIDS: 110 2. HIV-: 52	1. Their serologic status 1 month before study entry not known 2. AIDS	1. SCID I and II (DSM-III-R) = 2. GAF 3. HDRS, HARS 4. BSI 5. BHS	1. One or more personality disorders were diagnosed in 19% of both groups 2. 33% of the HIV+ men with personality disorders had current axis I disorders 3. Lifetime prevalence of axis I disorders in HIV+ was high
Catalan *et al.* (1996)	Cross-sectional 92 women	(CDC 1993) 1. Symptomatic: 25 2. Asymptomatic: 24 3. HIV-: 43		1. PSE	1. High rates of psychiatric morbidity (especially anxiety, depression and mixed affective disorders) 2. HIV status did not contribute to psychological morbidity
Rabkin *et al.* (1997)	Prospective 187 IDU	(Physician-rated scale; CDC, 1987) 1. HIV+: 105 2. HIV-: 82	1. No know their serostatus at least 1 month before 2. Absent to moderate physical symptoms 3. AIDS	1. SCID for DSM-III-R 2. GAF 3. SCL-90-R	1. Significant rates of depressive disorders, psychological distress and impaired psychological functioning in HIV+ and HIV- male and female IDU with no evidence of progressive decline

Table 1. *(Continued)*

STUDY	DESIGN & SAMPLE	HIV STAGE	EXCLUSION CRITERIA	PSYCHIATRIC MEASURES	CONCLUSIONS
					2. HIV+ men had higher levels of distress and greater impairment than HIV- men. Serostatus did not predict distress levels among women 3. Women had high levels of depressive and anxiety symptoms, stress and social conflict
Dew *et al.* (1997)	Prospective 170 ambulatory men of all transmission categories	(CDC, 1993) 1. AIDS: 73 2. No-AIDS: 40 3. HIV-: 57	1. No psychoactive substance use (including alcohol) for 24 hours prior to evaluate	1. Semi-structured interview (DSM-III-R) 2. Subscales of the Family Environment Scale, Coping Checklist, and Mastery Scale for Coping Style	1. Longitudinal evidence that the risk of certain psychiatric disorders is elevated in HIV+ men 2. Depression during the follow-up was significantly associated with HIV status 3. Low rate of generalised anxiety disorder during the 1-year follow-up period in both HIV+ and HIV-. Adjustment disorders with anxiety were more prevalent 4. Lifetime and 1-year follow-up rates in both groups of substance use disorders were high
Kelly *et al.* (1998)	Cross-sectional 229homosexual and bisexual men	1. CDC stage II/III: 79 2. CDC stage IV: 85 3. HIV-: 65	1. < 18 or > 65 years 2. Evidence of significant central nervous system complications of HIV	1. DIS (DSM-III-R) 2. Eysenck Personality Inventory 3. Defence Style Scale 4. Locus of Control of Behaviour	1. Elevated current and lifetime rates of major depression in both HIV- and HIV+ 2. Lifetime rates of alcohol abuse/dependence were significantly elevated in HIV+ men 3. Risk factor: A pre – HIV diagnosis of psychiatric disorder
Carson *et al.* (1998)	Cross-sectional 230 subjects	1. HIV+: 78 2. HIV-: 138	1. Medical illness 2. Known HIV status	1. Clinical Interview Schedule (CIS)	No substantial differences in psychiatric morbidity between HIV+ and HIV- subjects
Myers *et al.* (1999)	Cross-sectional 2 samples: a) 234 African American men homosexual b)135 African American women	Men: 1. HIV-: 75 2. No-AIDS: 63 3. AIDS: 95 Women: 1. HIV-: 35	1. < 18 or > 50 years 2. Low educational attainment or functional illiteracy 3. Acute medical, neurological or psychiatric condition	Men: 1. CIDI (DSM-III-R and ICD-10) Women: 1. University of Michigan Revised Short Form of CIDI	1. High prevalence of psychiatric disorders in both samples (during the past 12 months) 2. Anxiety spectrum disorders (38%) and mood disorders (23%) prevalent among men. Risk factors: Role strain. Low income, current drug use, low social support

Table 1. *(Continued)*

STUDY	DESIGN & SAMPLE	HIV STAGE	EXCLUSION CRITERIA	PSYCHIATRIC MEASURES	CONCLUSIONS
		2. No-AIDS: 59 3. AIDS: 31			3. Depression and post-traumatic stress disorder prevalent among women. Risk factors: Low social support and low income 4. HIV seropositivity were not associated with psychiatric risk in either group
Johnson *et al.* (1999)	Prospective 187 IDU	1. HIV+: 105 2. HIV-: 82	1. Not know their serologic status at least 1 month before 2. AIDS	1. SCID for DSM-III-R	HIV infection is associated with increased risk for persistent or recurrent major depressive disorder among IDU

higher than expected. A plausible explanation for this finding is that control groups are generally recruited from subjects testing negative to HIV serology screening, which implies the selection bias of being at least HIV risk behaviour positive[46,50-53,56,60-61,71]. However, this observation emphasises the importance of pre-morbid mental alterations being present at the time of HIV infection diagnosis.

Not all studies have examined all stages of HIV infection, nor have they included a significant number of individuals with advanced HIV infection or AIDS related diagnoses[48,50,55-57,84], which needs to be done in order to establish psychiatric morbidity changes in parallel with HIV infection evolution. Diverse research findings have been published in regard to the role of disease complications as triggers of psychiatric morbidity. While some disorders are clearly of increasing prevalence in more advanced disease stages (e.g. delirium and dementia), psychological distress has been reported in some surveys to be greater in asymptomatic HIV individuals or in those with early disease complications[58].

As the majority of the studies have a cross-sectional design, the incidence of mental disorders measured at one time-point could be too high, as most patients tend to overestimate symptoms at first contact.

Psychiatric measures and findings

In relation with the results, several diagnostic criteria for mental disorders were used, such as the ICD-10 (Classification of Mental and Behavioural Disorders) and DSM (Diagnostic and Statistical Manual of Mental Disorders) in its multiple versions. In some studies they were complemented with standardised psychiatric evaluation tools like Structured Clinical Interview (SCID), Clinical Interview Schedule (CIS), Composite International Diagnostic Interview (CIDI), Diagnostic Interview Schedule (DIS), etc.

Most investigators have found a high lifetime prevalence of psychiatric disorders, especially depression within their samples among both seropositive and seronegative individuals at risk for developing HIV. When concomitant to HIV infection mental disorders are measured, a wide range of results is found among studies. In part, this is due to most studies having used 1 month prevalence rates for defining a current episode, while some have used 6[56] and 12 months[55,57] as the reference time frame. Also, some studies solely consider mental alterations concomitant to HIV positivity, but do not take into account previous psychiatric diagnoses which are also important for establishing a bi-directional relationship between mental disorders and HIV disease.

Lyketsos *et al.*[84] reported a 50% prevalence of current psychiatric disorders among HIV-infected patients newly attending primary care clinics. This study has demonstrated the importance of screening, evaluating and treating patients with psychiatric morbidity from among new entrants to HIV medical clinics. Such screening improves patient compliance with follow-up medical visits in addition to increasing the likelihood that patients will receive appropriate evaluation and treatment.

Most studies have evaluated the appearance of major mental disorders (axis 1). Few studies have included personality disorders (axis 2) in their assessment[54,80-82], although all of them concluded that there was a significantly higher prevalence of this morbidity among HIV-positive subjects. Also, the risk for onset of axis 1 psychiatric disorders, the use of denial and helplessness and the frequency of social conflict may increase[54,96].

Future considerations

Despite the number of studies having been published, the exact correlation between HIV infection and mental disorders has not yet been established, nor has the evolution of psychological symptoms along the natural history of the disease been clarified. Future studies should be standardised in terms of methodology, evaluation and diagnostic criteria, and population samples need to be bigger and better selected.

Little is known about the impact of new antiretroviral treatments on mental health. The widespread availability of these drugs has been associated with a dramatic drop in the incidence of new AIDS events and mortality throughout the developed world, however it has also provoked important side-effects and deep life-style modifications. Thus, the undoubted benefits of antiretroviral therapy come at some cost in terms of both physical and psychological morbidity to the recipient that might be noticed and investigated[114].

Also, a relatively new field for research is the impact of psychological variables on adherence to antiretroviral therapy, which is worse when psychological symptoms appeared[22-25] and can complicate medical management.

Quality of life among HIV-infected individuals is influenced by all these factors and should be systematically measured to improve the assistance to those patients[26-27].

Finally, these findings highlight the need for routine assessment of psychiatric symptoms and psychosocial aspects in medical encounters with seropositive subjects and the availability of psychiatric and psychological support. Unfortunately, resources for this are not always available. Innovative programs have been developed that optimise treatment delivery by providing multidisciplinary services in one setting.

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