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Assessment of anxiety and depression in HIV-positive patients

[Evaluación de la ansiedad y la depresión en pacientes con VIH]

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Abstract

Context: Given the psychological disorders caused by HIV and antiretroviral treatment, knowledge of these disorders such as depression and anxiety remains a key element for therapeutic success.

Aims: To evaluate anxiety and depression in HIV-positive patients as well as to detach certain correlations between the level of anxio-depression and parameters such as gender, socioeconomic and socio-cultural status, viral load. It is also to validate the Arabic versions of these inventories and scales within the HIV-positive population.

Methods: The prospective observational study was extended over a 6-month period and included 220 HIV-positive patients. The scales and inventories used to assess anxio-depression were: The Hamilton Depression Scale (HDRS), the Hospital Anxiety and Depression Scale (HAD) and the Spielberger's inventory. Psychological stratification as an original method that has been created to classify patients according to their psychological status and biological parameters of HIV (viral load and CD4 count) was performed.

Results: The gender ratio was 52.78, where 144 (65.46%) were women, the average age was 41.60 ± 11.05 years, 125 patients were single. Anxiety and depression were prevalent in this sample. More than 90% of the patients presented depressing symptomatology and more than 85% anxious symptomatology according to the different scales and inventories. Anxio-depression was related to viral load and CD4 count according to different assessment tools.

Conclusions: This study has shown a high prevalence of anxio-depression, this is a warning signal to avoid any complications or suicidal risk. We have been able to validate the Arabic versions of the inventories and assessment items for anxiety and depression in a sample of Moroccan patients.

Keywords: anxiety; correlation; depression; evaluation; HIV; prevalence.

Resumen

Contexto: Dados los trastornos psicológicos causados por el VIH y el tratamiento antirretroviral, el conocimiento de estos trastornos, como la depresión y la ansiedad, sigue siendo un elemento clave para el éxito terapéutico.

Objetivos: Evaluar la ansiedad y la depresión en pacientes con VIH, así como separar ciertas correlaciones entre el nivel de ansiedad y los parámetros como el género, el estado socioeconómico y sociocultural, la carga viral. Además, validar las versiones árabes de estos inventarios y escalas dentro de la población VIH positiva.

Métodos: El estudio observacional prospectivo se extendió durante un período de 6 meses e incluyó a 220 pacientes VIH positivos. Las escalas e inventarios utilizados para evaluar la ansiedad-depresión fueron: la Escala de Depresión de Hamilton (HDRS), la Escala de Ansiedad y Depresión del Hospital (HAD) y el inventario de Spielberger. Fue aplicada la estratificación psicológica como método original creado para clasificar a los pacientes según su estado psicológico y los parámetros biológicos del VIH (carga viral y recuento de CD4).

Resultados: La proporción de género fue de 52,78, donde 144 (65,46%) eran mujeres, la edad promedio fue de 41,60 ± 11,05 años, 125 pacientes eran solteros. La ansiedad y la depresión fueron frecuentes en esta muestra. Más del 90% de los pacientes presentaron sintomatología deprimente y más del 85% sintomatología ansiosa, según las diferentes escalas e inventarios. La ansiedad por depresión se relacionó con la carga viral y el recuento de CD4 de acuerdo con diferentes herramientas de evaluación.

Conclusiones: Este estudio ha demostrado una alta prevalencia de ansiedad-depresión, esta es una señal de advertencia para evitar cualquier complicación o riesgo suicida. Se pudieron validar las versiones árabes de los inventarios y elementos de evaluación de ansiedad y depresión en una muestra de pacientes marroquíes.

Palabras Clave: ansiedad; correlación; depresión; evaluación; VIH; prevalencia.

INTRODUCTION

Considered a major public health problem, HIV continues to kill people around the world with more than 35 million deaths to date and 1 million people have died of HIV-related causes in 2016 (Ministère de la Santé du Grand-Duché de Luxembourg, 2019).

By the end of 2016, there were around 36.7 million people living with HIV worldwide, including 1.8 million new infections (OMS, 2018).

In Morocco, the prevalence of HIV remains low in the general population (0.1%), the total cumulative number of people living with HIV notified since the beginning of the epidemic in 1986 to end of June 2017 amounted to 13,322 three regions concentrate more than 50% of cases (Souss-Massa, Marrakech-Safi and Casablanca-Settat) (Ministère de la Santé Maroc, 2017).

The prevalences of anxiety and depression are very variable (10 to 70%) in HIV-infected patients. In the United States about 62% of HIV patients seek mental health services. The epidemic has important repercussions on the mental health of the affected individuals so that these mental disorders have a reciprocal effect on the evolution of the disease and more specifically on the therapeutic observance (Sanchez-Valero, 2003; Horo et al., 2014).

The objective of this study was to evaluate anxiety and depression in HIV-positive patients as well as to detach certain correlations between the level of anxio-depression and parameters such as gender, socio-economic and sociocultural status, and viral load, among others.

It was also to validate the Arabic versions of these inventories and scales within the HIV-positive population.

MATERIAL AND METHODS

This prospective observational study was extended over a 6-month period and included 220 HIV-positive patients.

Inclusion criteria

- Age: between 18 and 75 years old.
- Symptomatic and asymptomatic HIV infection.
- Complete clinical-biological record.
- Patient consent.

Exclusion criteria

- Age: under 18 and over 75 years old.
- No HIV infection.
- Incomplete clinical-biological record.
- Patient do not consent.

HDRS Scale (Hamilton Depression Scale)

This is a multiple-choice questionnaire assessing depression (Luckenbaugh et al., 2015). It does not allow the diagnosis of depression but allows to evaluate the intensity of depressive symptoms and specially to appreciate its components (Berrios and Bulbena, 1990). This questionnaire exists in several forms, at 17, 21, 23, and 26 items. The 17-item questionnaire is the most used form.

The Hamilton scale classifies patients into 3 categories:

- Score from 10 to 13: mild depressive symptoms.
- Score from 14 to 17: mild to moderate depressive symptoms.
- Score greater than 18: moderate to severe depressive symptoms.

Hospital Anxiety and Depression Scale (HAD)

It was originally developed by Zigmond and Snaith (1983) and is commonly used by physicians to determine the patient's levels of anxiety and depression. HAD is a 14-elements scale that generates ordinal data, seven articles relate to anxiety (A-score) and seven relate to depression (D-score) (Turk et al., 2015):

A-score

Anxious symptomatology:

- A-score ≤ 7: no symptomatology.
- A-score from 8 to 10: doubtful symptomatology.
- A-score ≥ 11: certain symptomatology.

D-score

Depressive symptoms:

- D-score ≤ 7: no symptomatology.
- D-score from 8 to 10: doubtful symptomatology.
- D-score ≥ 11: certain symptomatology.

Spielberger Inventory

The inventory of Spielberger, is a test of self-assessment of the level of anxiety, it has been widely used to measure the anxiety of patients in primary health care (Court et al., 2010). This inventory classifies patients, according to their level of anxiety, into five groups:

- Score ≤ 35: anxiety level is minimal.
- 36 ≤ Score ≤ 45: anxiety level is low.
- 46 ≤ Score ≤ 55: anxiety level is moderate.
- 56 ≤ Score ≤ 65: anxiety level is high.
- Score ≥ 66: anxiety level is very high.

Psychological stratification

Psychological stratification is an original idea to classify HIV-positive patients into psychological grades based on the presence or absence of depression and/or anxiety, CD4 rate and viral load.

Statistical analysis

The statistical analysis was done using the IBM SPSS Statistics 20.0. A $p < 0.05$ was considered statistically significant. Statistical tests were selected based on study factors (qualitative with two or more groups, matched or independent, or quantitative) and response variables (categorical qualitative with two or more groups, ordinal qualitative or quantitative).

The association of response variables (levels of anxiety, depression, and demand for information) with quantitative study factors (weight and age) was based on Spearman's correlation, independent qualitative two factors groups (gender) was done according to the Kruskal-Wallis test and the association with the independent qualitative study factors to several groups was done according to the Cochran-Armitage test.

The correlation between the different scales of study was according to Pearson's correlation.

Ethics

Agreement of the ethics committee

The study was conducted after obtaining the agreement of the ethics committee of the Faculty of Medicine and Pharmacy of Rabat under number 354 on February 23, 2017.

Informed consent and respect for anonymity

Patients were informed of the nature of our study, we explained the approach of each parameter studied in order to have their consent by respecting the will of each and the anonymity of the personal data, which were used solely for research purposes.

RESULTS

A total of 220 patients were selected for our study, 144 (65.46%) were women (Table 1), the gender ratio was 52.78, the average age was 41.60 ± 11.05 years, 125 patients were single, 77 (35%) were illiterate, 93 (42.27%) rural, 57 (25.91%) unemployed, 117 (53.18%) without monthly income, 48 (21.82%) without medical coverage, 39 (17.73%) had family support, 118 (53.64%) were alcoholics, 94 (42.73%) were substance abusers, 202 (91.82%) had a psychiatric history.

Table 1. Characteristics of the study population.

Variable	Effective and average	Variable	Effective and average
Gender		**Medical cover**	
Male	76 (34.54%)	Without	48 (21.82%)
Female	144 (65.46%)	Mutual	172 (78.18%)
Weight and BMI		**Family support**	
Weight (kg)	58.13 ± 13.86	Yes	52 (23.63%)
BMI	21.26 ± 5.85	No	168 (76.36%)
Age		**Smoking**	
Between 18 and 25 years	15 (6.81%)	Yes	173 (78.63%)
Between 26 and 35 years	78 (35.45%)	No	47 (21.37%)
Between 36 and 45 years	72 (32.73%)	**Alcoholic**	
Between 46 and 55 years	31 (14.09%)	Yes	118 (53.63%)
More than 55 years	24 (10.92%)	No	102 (46.37%)
Marital status		**Drug addiction**	
Single	125 (56.82%)	Yes	94 (42.92%)
Married	16 (7.27%)	No	126 (57.08%)
Divorced/Widow	79 (35.91%)	**Psychiatric history**	
Level of study		Anxiety	202 (91.81%)
Illiterate/unschooled	77 (35%)	Depression	153 (69.54%)
Primary/college	96 (43.63%)	Bipolar disorders	13 (5.90%)
Secondary	30 (13.63%)	**Transmission of the virus**	
University	17 (7.72%)	Sexuality	163 (74.09%)
Middle of life		Injection of drugs	2 (0.91%)
Rural	93 (42.27%)	Unknown	55 (25%)
Urban	127 (57.73%)	**Patient on antiretroviral therapy**	
Professional activity		Yes	194 (88.18%)
Unemployed	57 (25.91%)	No	26 (11.82%)
With a job	163 (74.09%)	**Type of treatment**	
Monthly income		2NRTI + 1 NNRTI	124 (63.91%)
Nothingness	39 (17.72%)	2NRTI + 1 INIs	70 (36.08%)
Less than 300 USD	96 (43.63%)	**Therapeutic compliance**	
Between 300 and 600 USD	65 (29.54%)	Patient observing	171 (88.14%)
Between 600 and 900 USD	19 (8.63%)	Nonobservant patient	23 (11.86%)
More than 900 USD	1 (0.48%)		

NRTI: Nucleoside reverse transcriptase inhibitors; NNRTI: Non-nucleoside reverse transcriptase inhibitors; INIs: Integrase inhibitors.

Table 2. Patient classification depending on the CD4 count and viral load.

CD4 count and viral load	Number and average
CD4 > 500/mm³	178 (80.91%)
350 < CD4 ≤ 500/mm³ and CV < 100,000 copies/mL	21 (9.54%)
350 < CD4 ≤ 500/mm³ and CV ≥ 100,000 copies/mL	17 (7.72%)
200 ≤ CD4 ≤ 350/mm³	4 (1.82%)
CD4 < 200/mm³	0

CV: Viral load.

Table 3. Depression according to the Hamilton depression scale (HDRS).

Gender	Average score ± standard deviation	HDRS < 10	10 ≤ HDRS ≤ 13	14 ≤ HDRS ≤17	HDRS ≥ 18
Group	17.18 ± 2.77	10	18	34	158
Male	16.73 ± 1.96	4	7	9	56
Female	16.81 ± 2.49	6	11	25	102

The mode of transmission of the virus was sexual in 163 (74.09%) cases. In total, 194 (88.18%) of the patients were on antiretroviral treatment of which 124 (63.91%) under tritherapy type 2 NRTI (nucleoside reverse transcriptase inhibitors) + 1NNRTI (non-nucleoside reverse transcriptase inhibitors). 88.14% of patients were observant to treatment (Table 1).

The average weight of this population was 58.13 ± 13.86 kg. The average BMI value was 21.26 ± 5.85 (Tables 1).

A total of 178 patients had a CD4 count >500/mm³; no patient had a CD4 count <200/mm³ (Table 2).

Hamilton depression scale

The depression on the Hamilton scale, with its different degrees, was of the order 95.45% (Table 3), 37 patients take their antidepressant treatments. The number of patients with moderate to severe depressive symptoms was 158, including 56 men and 102 women (Table 3).

Through the results obtained, we can conclude that the intensity of the symptoms of depression was not related to age (p = 0.38), nor to weight (p =

0.45), so we concluded that there was a strong association between the intensity of depressive symptoms and gender (p = 0.0035) and the intensity of symptoms of depression and viral load (p = 0.0063).

Hospital Anxiety and Depression scale

D-score: Depressive symptomatology

The depressive symptomatology, whether doubtful or certain, in the study population was of the order of 92.27%, 66.50% of whom were women (Table 4).

Depressive symptomatology was not age-related (p = 0.46) or weight (p = 0.62), therefore, we concluded that there was a strong association between symptoms of depression and gender (p = 0.0021) as well as between the intensity of symptoms of depression and viral load (p = 0.0017).

A-score: Anxious symptomatology

The anxiety symptom, whether doubtful or certain, in the study population was of the order of 91.82% (Table 4), 66.33% of the anxious were female (Table 4).

Table 4. Depression according to the Hospital Anxiety and Depression scale (HAD).

Gender	Average score ± standard deviation	HAD ≤ 7	8 ≤ HAD ≤ 10	HAD ≥ 11
	D-score			
Group	11.85 ± 1.32	17	33	170
Male	11.86 ± 1.02	8	11	57
Female	11.95 ± 1.14	9	22	113
	A-score			
Group	11.16 ± 2.02	18	25	177
Male	11.03 ± 1.14	8	9	59
Female	11.25 ± 1.17	10	16	118

Table 5. Anxiety according to the Spielberger scale (Sp).

Gender	Mean score ± standard deviation	Sp ≤ 35	36 ≤ Sp ≤ 45	46 ≤ Sp ≤ 55	56 ≤ Sp ≤ 65	Sp ≥ 66
Group	53.01 ± 3.26	29	37	43	59	52
Male	52.03 ± 2.54	9	15	19	17	16
Female	53.11 ± 2.67	20	22	24	42	36

The anxiety symptomatology was not related to age (p = 0.55), nor to weight (p = 0.29), therefore, we concluded that there was a strong association between symptoms of anxiety and gender (p = 0.0033) as well as between the intensity of symptoms of anxiety and viral load (p = 0.0026).

Anxiety according to the Spielberger scale

Anxiety symptoms, whether mild, moderate, high or very high, in the study population were of the order of 86.82% (Table 5), 64.92% of the anxious were female (Table 5).

The anxiety symptomatology was not related to age (p = 0.63), nor to weight (p = 0.37), therefore, we concluded that there was a strong association between symptoms of anxiety and gender (p = 0.0039) as well as between the intensity of symptoms of anxiety and viral load (p = 0.0034).

Psychological stratification

The classification of patients into psychological grades found 171 patients in Psychological Grade 11 (GP 11) (Table 6).

DISCUSSION

Depression and anxiety were very common in the study population. Neuropsychiatric and psychopathological complications are common among HIV-positive people. Depression, anxiety and suicidal thoughts, especially at the time of the announcement of the disease, are among the most common disorders seen in carriers of the virus (Faulstich, 1987; OMS, 2001).

The number of people with AIDS who develop signs of damage to the central nervous system is estimated at 75% (Fabian, 1992).

Unfortunately, the majority of these patients are not followed psychologically, which can aggravate their situation knowing that the heaviness of psychiatric disorders is proportional to the evolution of the disease (Caballero and Nahata, 2005).

Depression remains more common among HIV-infected patients compared to the general population. It would be twice as common in HIV-positive patients as in HIV-negative patients. The preva-

lence reported in various literature reviews are between 15 and 45% (Bary et al., 2004).

In the United States about 62% of HIV patients seek mental health services (Sanchez-Valero, 2003). Depressive mood disorders in HIV patients may have several etiologies. First, the discovery of the seropositivity, severity and non-curative nature of the pathology. Then comes the behavior and the non-support of relatives and society vis-à-vis patients. Finally, the psychiatric history, personality, lifestyle and socio-economic and socio-cultural status of the patient (Sanchez-Valero, 2003; Luckenbaugh et al., 2015).

In this study, depression was correlated with gender and viral load. In a study conducted in Abidjan on anxiety and depression during antiretroviral treatment, this correlated with having children and a high rate of CD4 > 200 T (Horo et al., 2014).

HIV has a strong tropism for the central nervous system leading to neuropathological changes. There is also a decrease in neurotransmitter levels following a decrease in tryptophan concentrations, which is associated with a decrease in serotonin biosynthesis (Sanchez-Valero, 2003).

The disease itself and antiretroviral therapy can lead to endocrine, metabolic and neurological disorders that can aggravate or induce depressive disorders (Sanchez-Valero, 2003).

Depression and stress have an adverse effect on the course of the disease, decreasing immunocompetence by decreasing the number of lymphocytes (Caballero and Nahata, 2005).

Table 6. Classification of patients according to stratification of psychological grades.

Psychological grade	Characteristics	Effective
Psychological grade 1 (GP 1)	Patient neither depressed nor anxious and CD4 > 500/mm^3	7
Psychological Grade 2 (GP 2)	Patient neither depressed nor anxious and $350 < CD4 \leq 500$/mm^3 and CV < 100,000 copies/mL	2
Psychological Grade 3 (GP 3)	Patient neither depressed nor anxious and $350 < CD4 \leq 500$/mm^3 and CV ≥ 100,000 copies/mL + fast CD4 drop	1
Psychological Grade 4 (GP 4)	Patient neither depressed nor anxious and $200 \leq CD4 \leq 350$/mm^3	0
Psychological grade 5 (GP 5)	Patient neither depressed nor anxious and CD4 < 200/mm^3	0
Psychological grade 6 (GP 6)	Anxious patient not depressed and CD4 > 500/mm^3	0
Psychological Grade 7 (GP 7)	Anxious patient not depressed and $350 < CD4 \leq 500$/mm^3 and CV < 100,000 copies/mL	6
Psychological Grade 8 (GP 8)	Anxious patient not depressed and $350 < CD4 \leq 500$/mm^3 and CV ≥ 100,000 copies/mL + fast CD4 drop	2
Psychological grade 9 (GP 9)	Anxious patient not depressed and $200 \leq CD4 \leq 350$/mm^3	0
Psychological Grade 10 (GP 10)	Anxious patient not depressed and CD4 < 200/mm^3	0
Psychological grade 11 (GP 11)	Depressed patient and CD4 > 500/mm^3	171
Psychological grade 12 (GP 12)	Depressed patient and $350 < CD4 \leq 500$/mm^3 and CV < 100,000 copies/mL	11
Psychological Grade 13 (GP 13)	Depressed patient and $350 < CD4 \leq 500$/mm^3 and CV ≥ 100,000 copies/mL + fast CD4 drop	16
Psychological Grade 14 (GP 14)	Depressed patient and $200 \leq CD4 \leq 350$/mm^3	4
Psychological Grade 15 (GP 15)	Depressed patient and CD4 < 200/mm^3	0

CV: Viral load.

Suicide risk is very common in this population, the relative risk of suicide is 66.15 times higher than in the general population and 36 times higher than in patients without AIDS. Suicidal risk has decreased as a result of the development of antiretrovirals, the management of opportunistic infections and psychological management, as well as therapeutic education and the clarification of the nature of the pathology, which has become increasingly acceptable in members of society (Caballero and Nahata, 2005).

As for anxiety, it is as frequent as depression and often associated with it, it is estimated at 32% to 53.5% among HIV-positive people (Bary et al., 2004).

In HIV-positive people, the anxiety state is often linked to some of the patient's questions about the pathology, its future, the behavior of loved ones and society, and it will always keep its job.

In our study, anxiety was related to gender and viral load, this is consistent with the results found by Bary et al. (2004) who reported that the level of anxiety is correlated with high viral load and the male gender, but the same authors' correlates with a low level of education, lack of work and old disease.

For single patients, the questions that arise are about the possibility of getting married and having children, for married patients it is how to declare one's HIV status to one's partner.

An anxiety state can influence the evolution of the pathology, thus the therapeutic observance especially the forgetting of drug intake reason for which, a newspaper of treatment was proposed composed of days and posologies.

According to the same study by Horo et al. (2014), 31.5% of cases were anxious, these patients were on antiretrovirals for at least two years. According to the same study, at the initiation of antiretrovirals, anxiety was found in patients with T cell CD4 ≥ 200/mL levels in 15.2% of cases compared to 40.8% of cases in subjects with T cell CD4 count < 200/mL (Horo et al., 2014).

The classification of patients in psychological grades has revealed 171 patients of Psychological Grade 11 (GP 11), this is undoubtedly an alarm signal to mobilize to take good care psychologically HIV positive to improve their psychological well-being and avoid any complication or suicidal risk.

CONCLUSIONS

The study has shown a high prevalence of anxio-depression, this is a warning signal to avoid any complications or suicidal risk. The Arabic versions of the inventories and assessment items for anxiety and depression was validated in the patients. The psychological stratification, although original, represents a relevant tool to mobilize according to the severity of the symptoms.

Although antiretroviral drugs can cause psychological disorders in HIV-positive people, the pathology in itself remains the essential risk factor responsible for these disorders.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHOR CONTRIBUTION:

Contribution	El Alama H	Fatihi T	Benmoussa A	Barkat A
Concepts or ideas	x		x	x
Design	x		x	x
Definition of intellectual content	x		x	x
Literature search	x		x	x
Clinical studies	x	x		x
Experimental studies	x	x	x	x
Data acquisition	x	x	x	x
Data analysis	x	x		x
Statistical analysis	x			x
Manuscript preparation	x	x	x	x
Manuscript editing	x	x	x	x
Manuscript review	x	x	x	x