Prevalence and factors associated with severe depressive symptoms in older West African people living with HIV: the West Africa IeDEA collaboration

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Abstract

Background To encourage successful aging, the psychological domain must not be neglected. As depression, one of the most common psychiatric disorders in PLHIV, has negative impact on both mental and physical health, the prevalence and the factors associated with the presence of severe depressive symptoms in older PLHIV living in West Africa need to be well understood.

Methods Data from PLHIV aged ≥50 years old and on ART since ≥6 months were collected in three clinics (two in Côte d’Ivoire, one in Senegal) participating to the West Africa International epidemiological Databases to Evaluate AIDS (IeDEA) collaboration. The severity of the depressive symptoms was measured using the Center for Epidemiological Studies Depression scale (CES-D) and associated factors were identified using logistic regression.

Results The median age of the 334 PLHIV included in the study was 56.7 (53.5-61.1) years old, 57.8% were female and 87.1% had an undetectable viral load. The prevalence of severe depressive symptoms was 17.9% [95% Confidence Interval: 13.8 - 22.0]. PLHIV with severe depressive symptoms were more likely to have no professional activity, and to be current or former tobacco smokers but were less likely to be overweight or obese.

Conclusions The prevalence of severe depressive symptoms is high among older PLHIV living in West Africa. How to integrate the measurement and the management of depressive symptoms in the standard of care should be investigated, both for older PLHIV on ART but also for newly diagnosed older patients, in order to achieve the 90-90-90 objectives.

Background

As HIV infection is now a chronic disease in most settings including sub-Saharan Africa
(SSA), (1) patients living with HIV (PLHIV) have a lifespan comparable to the one observed in the general population. Older HIV patients experienced complications in the physiological domain because of compromised immune system with the involution of thymus, ART side effects and polypharmacy. (2) However, to facilitate successful aging, the psychological and the social domains must not be neglected. (3) Among psychological complications, depression emerges as a public health issue. (4) Depression is one of the most common psychiatric disorders in PLHIV (5) and has a high prevalence in PLHIV on ART living in SSA (major depressive disorder pooled prevalence: 13% and severe depressive symptoms prevalence varied between 14% and 32%). (6) Depression is associated with suboptimal HIV treatment outcomes (delayed HIV diagnosis, ART initiation, poor ART adherence, lack of viral suppression, and increased AIDS-related mortality), (7,8) but depression remains commonly under-diagnosed in SSA. (5,9) However, in western countries, untreated depression in PLHIV has also been related to increased cognitive complaints and negative consequences in multiple aspects of quality of life. (10–12) In addition to aging related problems, these medical and psychological factors may be exacerbated in older PLHIV. (13)

Even if the concern on depression in African PLHIV substantially increased since a few years, studies focusing on older PLHIV living in SSA are scarce. Given the negative impact of depression on mental and physical PLHIV health, it is important to identify associated factors to provide insights for clinical interventions. In this context, the present study aimed to describe the prevalence and identify factors associated with the presence of severe depressive symptoms in PLHIV aged 50 years and above living in West Africa.

Materials And Methods

Study design
This study is a part of an ancillary study project within the West Africa network of the International epidemiological Databases to Evaluate AIDS (IeDEA) of the US National Institutes of Health (https://www.iedea.org/regions/west-africa/). (14) This study was conducted in two different countries, in three urban clinics with a large case load of PLHIV and selected by convenience: the infectious and tropical disease department of the Treichville University Hospital, and the referral public clinic (CePReF) in Yopougon Attié Hospital (Abidjan, Côte d’Ivoire) and the infectious and tropical disease department of the Fann University Hospital (Dakar, Senegal). The inclusion period of the study occurred between February 2016 to November 2017. This analysis is based on the baseline data of a 2-year longitudinal study evaluating different aspects of aging with HIV (cognition, physical function, depression and frailty) with a follow-up still ongoing.

Study population

Patients were eligible if they were living with type-1 HIV, 50 years old or older and on ART since at least 6 months. We excluded patients having an history of cerebral opportunistic infection, a neurological pathology (history of stroke or Parkinson disease), a current disabling opportunistic infection, a meningitis, a sensitivo-motor paralysis, a psychiatric illness (including psychotropic treatment), a cancer under treatment or a respiratory or cardiac insufficiency.

Severity of depressive symptoms

The severity of depressive symptoms was evaluated with the Center for Epidemiological Studies Depression scale (CES-D), a 20-item self-report scale assessing the occurrence of depressive symptoms during the past week using a 4-point lickert scale. (15) Due to variability in patients’ literacy, each item was read aloud by a trained doctor or nurse. A translation of items in the national language other than French was used if necessary. The
CES-D has already been validated among a variety of populations in both high and resource-limited settings. (15-17)

Other covariates

Data were collected through basic questions and medical examination. Patients’ sociodemographic characteristics as age, gender, level of education, marital status and professional activity were recorded.

Concerning HIV medical data, the initial clinical stage was defined using the Centers for Disease Control and Prevention (CDC) definition (A, B or C). Baseline Nadir CD4 and more recent CD4 were presented in two categories (≤ 200 vs > 200 cells/µl and < 500 vs ≥ 500 cells/µl, respectively). The composition of the initial and current ART treatment was presented through a categorical variable (TDF/3TC/EFV vs other combination). The duration of HIV disease was calculated as the delay in months between the first positive serology date and the study’s inclusion date. Adherence to ART was defined as the percentage of tablets the patient declared to take over 7 days (in comparison to the prescribed total number of tablets over this period).

Substance use was evaluated through basic questions for tobacco and drugs (current, former or never). Alcohol consumption was evaluated with the AUDIT-C. A score ≥ 3 for men or ≥ 4 for women was considered as current drinking.

The Body Mass Index (BMI) was considered in two categories: low or normal BMI (low when < 18 kg/m², normal between 18 to 24 kg/m²) and high when ≥ 25 kg/m². Patients were also asked if they had ever been diagnosed with these comorbidities: hypertension, diabetes, hyperlipidemia, C or B hepatitis, tuberculosis, migraine, arthrosis, or other. A variable “comorbidities” has been created with three categories: absence, only one, or more than one comorbidity. Histories of trauma and neurologic diseases were also documented.
Measures of functional status

Activities of the daily living (ADL) (18) and Instrumental activities with daily living (IADL) (19) scales were used to evaluate the autonomy of the patients. The final ADL and IADL scores range from 0 to 6 and 0 to 4, respectively (0 indicating the lowest degree of autonomy).

Statistical analysis

The characteristics of the study sample were described using median and interquartile range (IQR) for continuous variables, numbers and proportions for categorical variables. For the analyses, a total score ≥ 17 for men and ≥ 23 for women was used to define presence of severe depressive symptoms. (20) In order to describe the five most reported depressive symptoms among depressed PLHIV, we used the factorial structure described by Sheehan et al. (21) grouping the items 1, 2, 5, 7, 11, 13 and 20 as somatic symptoms, the items 3, 6, 14, 17 et 18 as depressive affects, the items 4, 8, 12 and 16 as negative affects and the items 9, 10, 15 et 19 as interpersonal deficit. For this analysis, each item was recoded in two categories: significant presence of the symptoms (≥ 3 days) or no (≤ 2 days). As the expression of depression could be different between females and males, we identified which symptoms were significantly the most reported according to gender, using Chi-2 tests.

The prevalence of severe depressive symptoms was reported and factors associated with the presence of severe depressive symptoms were evaluated using logistic regression analyses. Before conducting logistic regression analyses, a multivariable Random Forest imputation of missing data was performed. As no significant difference was observed between the two databases (with and without missing data), we used the database with imputed missing data for these analyses. In the multivariable regression model, we
included all variables associated with the dependent variable with a p-value ≤ 0.2 in univariable analyses. The “inclusion centers” variable was included as a cofounder in each model. Unbalanced variables (85%/15%) were excluded from the multivariable analyses. The final model was obtained with a descending step by step selection and we considered significant associations at p < 0.05. The goodness of fit of the final model was evaluated with the Hosmer-Lemeshow test (p > 0.05). Statistical analyses were computed using R software.

Results

Characteristics of the sample

A total of 334 patients were included in our study. The median (IQR) age was 56.7 (53.5–61.1) years old. Among them, 34.7% were aged 60 years and older, 57.8% were female, and 50.6% had a primary or less level of education. Almost half of them lived in couple (46.4%) and were active (53.6%) (Table 1).
Table 1. Characteristics of the study population according to the severity of depressive symptoms

|                        | No severe depressive symptoms | Severe depressive symptoms | p     | N    | %    |
|------------------------|-------------------------------|---------------------------|-------|------|------|
| **TOTAL**              | 274                           | 60                        |       | 334  | (100.0) |
| **Socio-demographic data** |                               |                           |       |      |      |
| Age                    |                               |                           |       |      |      |
| 50–59                  | 180 (65.7)                    | 38 (63.3)                 | 0.73  | 218  | (65.3) |
| ≥60                    | 94 (34.3)                     | 22 (36.7)                 |       | 116  | (34.7) |
| Gender                 |                               |                           |       |      |      |
| Male                   | 109 (39.8)                    | 32 (53.3)                 | 0.05  | 141  | (42.2) |
| Female                 | 165 (60.2)                    | 28 (46.7)                 |       | 193  | (57.8) |
| Education level        |                               |                           |       |      |      |
| Primary or less        |                               |                           |       |      |      |
| Secondary or more      | 132 (48.2)                    | 33 (55.0)                 | 0.34  | 169  | (50.6) |
| Marital Status         |                               |                           |       |      |      |
| In couple              | 125 (45.6)                    | 30 (50.0)                 | 0.54  | 155  | (46.4) |
| Alone                  | 149 (54.4)                    | 30 (50.0)                 |       | 179  | (53.6) |
| Professional activity  |                               |                           |       |      |      |
| Active                 | 153 (55.8)                    | 26 (43.3)                 | 0.08  | 179  | (53.6) |
| Non active             | 121 (44.2)                    | 34 (56.7)                 |       | 155  | (46.4) |
| **HIV Clinical data**  |                               |                           |       |      |      |
| Clinical disease stage at ART initiation |                   |                           |       |      |      |
| A                      | 86 (31.4)                     | 14 (23.3)                 | 0.42  | 100  | (29.9) |
| B                      | 145 (52.9)                    | 37 (61.7)                 |       | 182  | (54.5) |
| C - AIDS               | 39 (14.2)                     | 9 (15.0)                  |       | 48   | (14.4) |
| Unknown                | 4 (1.5)                       | .                        |       | 4    | (1.2)  |
| Duration of infection (months) |               |                           |       |      |      |
| 6–69                   | 75 (27.4)                     | 8 (13.3)                  |       | 83   | (24.9) |
| 69–108                 | 69 (25.2)                     | 14 (23.3)                 |       | 83   | (24.9) |
| ≥108                   | 65 (23.7)                     | 16 (26.7)                 |       | 81   | (24.3) |
| Nadir CD4              |                               |                           |       |      |      |
| >200                   | 106 (38.7)                    | 14 (23.3)                 | 0.02  | 120  | (35.9) |
| ≤200                   | 158 (57.7)                    | 45 (75.0)                 |       | 203  | (60.8) |
| Missing                | 10 (3.6)                      | 1 (1.7)                   |       | 11   | (3.3)  |
| Most recent CD4        |                               |                           |       |      |      |
| ≥500                   | 141 (51.5)                    | 27 (45.0)                 | 0.38  | 168  | (50.3) |
| <500                   | 130 (47.4)                    | 32 (53.3)                 |       | 162  | (48.5) |
| Missing                | 3 (1.1)                       | 1 (1.7)                   |       | 4    | (1.2)  |
| Detectable Viral load  |                               |                           |       |      |      |
| >0.0001                | 27 (9.9)                      | 16 (26.7)                 | <0.0001 | 43  | (12.9) |
| Missing                | 47 (17.2)                     | 9 (15.0)                  |       | 56   | (16.8) |
| Initial ART combinaison |                               |                           |       |      |      |
| 3TC + TDF + EFV        | 72 (26.3)                     | 10 (16.7)                 |       | 82   | (24.6) |
| Other                  | 200 (73.0)                    | 50 (83.3)                 |       | 250  | (74.9) |
| Missing                | 2 (0.7)                       | .                        |       | 2    | (0.6)  |
| Actual ART combinaison |                               |                           |       |      |      |
| 3TC + TDF + EFV        | 151 (55.1)                    | 25 (41.7)                 |       | 176  | (52.7) |
| Other                  | 123 (44.9)                    | 35 (58.3)                 |       | 158  | (47.3) |
| Adherence to ART (yes) | 261 (95.3)                    | 54 (90.0)                 |       | NA   | 315 (94.3) |
A large majority of patients had an undetectable viral load (87.1%); half of them having CD4 ≥ 500 (50.3%) and 60.8% a Nadir CD4 < 200. The median (IQR) duration of HIV infection was 108 months (68.9–141.0). Fourteen percent (14.4%) were on C stage at ART initiation. Concerning ART treatment, 25% and 52.7% received the standard combination for their initial and current treatment (according to the national treatment guidelines), respectively. The patients reported a high adherence to ART (94.3%).

Few patients reported substance use (< 8%), except for tobacco (current/previous) (17.1%).

Concerning other medical issues, 38% were overweight or obese, 35.3% reported one comorbidity in addition to their HIV disease and 22.2% more than one.

In terms of the ADL and IADL instruments, 97.0% and 99.1% of the patients got the maximum score (6 or 4, respectively).

Prevalence of severe depressive symptoms

The prevalence of severe depressive symptoms was 17.9% [95% Confidence Interval (CI): 13.8–22.0]. Among the PLHIV with severe depressive symptoms (N = 60), 80% reported
somatic symptoms, 73.3% depressive affects, 71.7% negative affects and 40% interpersonal deficit. The 5 most reported symptoms (Fig. 1) were: “not enjoying life” (70%), “being unhappy” (66.7%), “being restless” (63.3%), “feeling depressed” (58.3%) and “sadness” (56.7%). Compared to males, females reported more frequently the following symptoms: “being restless” (78.6% vs 50%, p = 0.02), “crying spells” (42.9% vs 18.7%, p = 0.03), “sadness” (71.4% vs 43.7%, p = 0.03) and “not enjoying life” (82.1% vs 58.4%, p = 0.05). They also reported more frequently that their life is a failure (71.4% vs 40.6%, p = 0.02).

Factors associated with severe depressive symptoms

In univariate models (Table 2), having a longer duration of the disease ≥ 141 months (OR = 3.2; 95%CI: 1.3–7.6), a Nadir CD4 ≤ 200 (OR = 2.1; CI95%: 1.1–4.2) and a detectable viral load (OR = 3.1; 95%CI: 1.5–6.3) were significantly associated with the presence of severe depressive symptoms. PLHIV with severe depressive symptoms were also more likely to be current or former tobacco smokers (OR = 2.5; 95%CI: 1.3–4.9) but were less likely to be overweight or obese (OR = 0.4; 95%CI: 0.2–0.7). Having no professional activity tend to be associated to severe depressive symptoms (p = 0.07).

In the multivariate model, having no professional activity (adjusted OR (aOR) = 1.9; 95%CI: 1.1–3.5), being current or former tobacco smokers (aOR = 2.2; 95% CI: 1.1–4.3) and having an abdominal obesity (aOR = 0.4; 95%CI: 0.2–0.8) remained associated with the presence of severe depressive symptoms.
Table 2: Factors associated with severe depressive symptoms in the study population

| Variables                        | Univariable models | Multivariable model |
|----------------------------------|--------------------|---------------------|
|                                  | p-value            | p-value             |
|                                  | OR (95%CI)*        | aOR (95%CI)*        |
| Age                              | 0.71               |                     |
| 50–59 years old                  | 1                  |                     |
| ≥60 years old                    | 1.12 (0.62–2.01)   |                     |
| Gender                           | 0.09               |                     |
| Men                              | 1                  |                     |
| Women                            | 0.61 (0.35–1.08)   |                     |
| Level of education               | 0.53               |                     |
| Primary or less                  | 1                  |                     |
| Secondary or more                | 1.21 (0.67–2.16)   |                     |
| Marital status                   | 0.62               |                     |
| In couple                        | 1                  |                     |
| Single                           | 0.87 (0.49–1.52)   |                     |
| Professional activity            | 0.07               | 0.03                |
| Active                           | 1                  | 1.92 (1.06–3.45)    |
| Active                           |                     |                     |
| Non active                       | 1.67 (0.95–2.95)   |                     |
| Duration of HIV infection        | 1                  |                     |
| [6–69[                           | 1                  |                     |
| [69–108]                         | 1.91 (0.75–4.83)   | 0.17                |
| [108–141[                        | 2.31 (0.93–5.78)   | 0.07                |
| >141                             | 3.16 (1.31–7.60)   | 0.01                |
| Clinical disease stage           | 1                  |                     |
| A                                | 1                  |                     |
| B                                | 1.31 (0.63–2.72)   | 0.46                |
| C                                | 1.23 (0.47–3.22)   | 0.67                |
| Nadir CD4                        | < 0.0001           |                     |
| >200                             | 1                  |                     |
| ≤200                             | 2.14 (1.09–4.16)   | 0.36                |
| CD4                              | 0.36               |                     |
| ≥500                             | 1                  |                     |
| <500                             | 1.30 (0.74–2.29)   |                     |
| Viral load                       | 0.002              |                     |
| Undetectable                     | 1                  |                     |
| Detectable                       | 3.10 (1.53–6.31)   |                     |
| Initial ART combination          | 0.10               |                     |
| 3TC + TDF + EFV                  | 1                  |                     |
| Other                            | 1.84 (0.88–3.84)   |                     |
| Actual ART combination           | 0.06               |                     |
| 3TC + TDF + EFV                  | 1                  |                     |
| Other                            | 1.75 (0.99–3.09)   |                     |
| Adherence to ART (no)            | 3.09 (0.96–9.91)   | 0.06                |
| Variables                     | Univariable models | Multivariable model |
|-------------------------------|--------------------|---------------------|
|                               | OR (CI 95%)*       | p-value             | aOR (CI 95%)*       | p-value |
| Alcohol consumption           | 1.89 (0.74–4.77)   | 0.18                | 2.18 (1.09–4.35)   | 0.03    |
| Tobacco (current/former)      | 2.53 (1.30–4.91)   | 0.01                | 2.18 (1.09–4.35)   | 0.03    |
| Drug consumption              | 1.94 (0.34–11.04)  | 0.45                |                     |         |
| BMI                           |                    | 0.01                | 0.01                |         |
| Normal/underweight            | 1                  |                     | 1                   |         |
| Overweight/obesity            | 0.38 (0.19–0.75)   |                     | 0.41 (0.21–0.82)   |         |
| Comorbidities                 |                    |                     |                     |         |
| History of trauma (ref.: no)  |                    |                     |                     |         |
| History of neurological disease (ref.: no) |        |                    |                     |         |

aOR: adjusted Odd Ratio; ART: antiretroviral; BMI: Body Mass Index; CI: confident interval; OR: Odd ratio;

**Discussion**

In the present study, in a large sample of PLHIV aged 50 years old and above, the presence of severe depressive symptoms is observed in almost 18% of the patients. The severity of depressive symptoms seems to be more related to social (ie having no professional activity) and behavioral (ie being current or former tobacco) aspects. Unexpectedly, having an abdominal obesity seems to be a protective factor at the occurrence of depressive symptoms.

Recent publications from western countries reported variable results for the prevalence of severe depressive symptoms in older PLHIV. Among PLHIV aged 50 years or above living in Portugal, 23.9% presented chronic anxiety or depression. (22) In PLHIV aged between 56 to 65 years old living in the United States, the prevalence of severe depressive symptoms was 28.2%. (10) As different scales and different cut-off even for a given scale were used, the comparison of the data are limited. When using the same scale and the same cut-off, a
prevalence of 18% was observed in PLHIV living in Senegal but being younger than our patients. (23) However, the prevalence of depressive symptoms is high and could not be neglected. In the context of the 3 × 90 objectives, screening and management of mental health disorders, including depression, has been listed as a research priority to improve timely diagnosis, ART initiation, retention and viral suppression. (24) Recent data have also reported a 24% increased risk of mortality in older PLHIV who are depressed. (25) Based on western countries studies, older PLHIV had to face different type of problems: stigma (26) and concerns about disclosure. (27) They also have some uncertainty about how ageing, HIV and treatment affect health in the long term. (27) The chronic aspect of the disease status and the increase of potential comorbidities with age could play an important role in PLHIV related-depression, as observed in other chronic diseases. (28) Further studies are needed to better understand the reality of aging experience in PLHIV living in SSA.

In accordance with other studies conducted in middle-aged PLHIV living in SSA, (29,30) poor social conditions seem to be an important factor associated with depressive symptoms. In South Africa, it was shown that unemployed PLHIV could have a 3-fold risk to present severe depressive symptoms. (29) Even we did not document any information about income, being unemployed is often indirectly related to a lack of income. Acting as a stressor, low income could lead to difficulties to financially support health expenses, particularly the one due to other comorbidities which are more likely to be numerous when PLHIV are getting older.

Concerning tobacco consumption, prior studies have documented an association between current cigarette smoking or nicotine dependence and the presence of severe depressive symptoms in middle-aged PLHIV living in western countries (31–33) but also with a diagnosis of major depression in older PLHIV living in Brazil. (34) As older PLHIV living in
SSA are more likely to be regular smokers and as tobacco consumption is often underestimated, (35) it is important to identify those patients to screen depression. Even few data are available about previous smokers among older PPHIV, those individuals might also be vulnerable and should be screened for depression.

The association between BMI and depression in PLHIV is not systematically explored and makes no consensus. (36–38) A low BMI could be an indirect marker of loss of appetite, one of the most reported symptoms in HIV related-depression. In the social representation, HIV infection and mental illness are also often associated with thinness. Being overweight or obese could be in some ways protective against bad mood or stigmatization but further investigations are needed to depict this point.

As observed in other studies conducted in SSA in middle-aged PLHIV, no effect of gender was observed. (23,39,40) However, the expression of depressive symptoms seems to be different in women and men, which is an important information for the clinicians for identifying depressed patients.

Concerning HIV clinical data, a longer duration of the disease and a lower Nadir CD4 are associated in univariate model with the presence of severe depressive symptoms. The impact of physical and emotional difficulties on the lived HIV experience should not be underestimated. In addition to actual problematic of living with HIV, long-time survivors might have to face different problematic compared to those diagnosed more recently (i.e. confusion about surviving so far, mourning of friends or family members lost to AIDS). (41) The link with viral load could not be further investigated in our sample because of an important proportion of missing data. More studies are needed.

As depression having deleterious effects on PLHIV but is a modifiable condition, we encouraged the screening and the management of depression in older PLHIV living in SSA. Promising results from culturally-sensitive psychotherapeutic intervention (42) or group-
based counseling intervention (43) using task-shifting in middle-aged PLHIV living in SSA have already been reported. As older PLHIV are less likely to be engaged in behavioral health treatment for depression than younger PLHIV, (44) it is important to also adapt psychotherapeutic interventions to the older PLHIV specific needs.

To our knowledge, this study represents the first opportunity to describe the prevalence of severe depressive symptoms in a large sample of older PLHIV in West Africa. However, the generalizability of the results and the comparison with other studies could be limited as we included PLHIV from urban sites being on ART since at least 6 months with hospital-based study sites. Second, the presence of depressive symptoms has been evaluated in the literature with a number of different tools having different psychometric validities, which leads to substantial variability in the measurements, (6) so results may not be generalizable across tools. Third, even HIV stigma is still a major social problem in PLHIV, we did not collect data on this issue but the impact of stigma on psychosocial well-being of PLHIV has already be shown to be associated with depression in SSA (39) and should not be under-estimated even in older PLHIV. Fourth, even high pooled sensitivity and specificity was observed for the CES-D in African studies, (45) a full clinical evaluation was not included in our scientific protocol to validate a major depressive disorder. As an interviewer-administered approach was used and despite the full training of the staff, social-desirability bias might not be completely avoided. Finally, the cross-sectional design of the present study cannot provide information on causal direction.

Conclusions

The prevalence of severe depressive symptoms is high among older PLHIV living in West Africa, representing a serious problem for the organization of care and follow-up of PLHIV. Further studies in older PLHIV are needed to describe in more details the phenomenon and better understand the reality of aging experience in PLHIV living in SSA. Since depression
has deleterious consequences on PLHIV lives, how to integrate the measurement and the management of depressive symptoms in the standard of care should be investigated both for older PLHIV on ART but also for newly diagnosed older patients, in order to guarantee 90-90-90 achievement. Finally, psychotherapeutic intervention, adapted to older PLHIV specific needs, should be developed.

Abbreviations

ADL Activities of Daily Living
AIDS Acquired Immune Deficiency Syndrome
aOR Adjusted Odd Ratio
ART Antiretroviral Therapy
BMI Body Mass Index
CDC Centers for Disease Control and Prevention
CES-D Center for Epidemiological Studies Depression scale
CI Confident Interval
HIV Human Immunodeficiency Virus
IADL Instrumental Activities of Daily Living
IeDEA International epidemiological Databases to Evaluate AIDS
IQR Interquartile Range
OR Odd Ratio
PLHIV People Living with HIV
SSA Sub-Saharan Africa

Declarations

Ethics approval and consent to participate
The protocol has been approved by the national ethic committee of each participating country: National Committee for Research Ethics (CNER), a department of the Ministry of Health and Public Hygiene in Abidjan, Cote d’Ivoire and the National Ethics Committee for Health Research (CNERS), a department of the Ministry of Health and Social Affairs in Dakar, Senegal.

**Consent for publication**

All the patients gave their written consent before being included in the study.

**Availability of data and material**

Complete data for this study cannot be posted in a supplemental file or a public repository at this current time because of scientific reasons here explained. This cross-sectional analysis is part of a 2-year longitudinal study evaluating different aspects of aging with HIV (cognition, physical function, depression and frailty) with a 2-year follow-up which ended in December 2019. Cross-sectional analyses on cognition and frailty and longitudinal analyses on these topics including depression are currently in progress and thus data couldn't be posted at this time.

**Competing interests**

The authors have no conflicts of interest to disclose

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Authors' contributions

CB, NdR and FD designed the study. CB coordinated the study, supervised the data management, conducted the statistical analyses and wrote the first draft. HF and NdR helped in the statistical methodology and analyses and also gave comments on the first draft. ZD, FNA, RA and JMT realized the inclusion of the patients and collected the data under the supervision of AT, EM and MS. All authors helped in the interpretation of the data, read and approved the final manuscript.

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Figures
Figure 1

Frequency of depressive symptoms reported by the patients in the whole study sample and according to gender.