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Depression and Suicidal Risk in HIV-Infected Adults at Brazzaville University Hospital: Prevalence and Associated Factors

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Abstract

Introduction: Highly active antiretroviral tritherapies have improved the quality of life of people living with HIV (PVVIH) and extended their life expectancy. However, the nervous system is faced with a neurotropic virus that evolves chronically, sometimes creating neurological disorders directly or indirectly linked to stigmatization or therapeutic effects. **Objective:** to determine the prevalence of depression associated with suicidal risk (SR) and identify associated factors. **Patients and method:** This was a prospective descriptive and analytical study from January 1 to November 30, 2022, including all HIV-positive patients receiving or not receiving antiretroviral therapy. The study took place in the infectious diseases department of Brazzaville University Hospital. This department has an inpatient capacity of 36 beds, and an outpatient capacity of 25 patients per day, three times a week. This is the largest center for PVVIH in Brazzaville. The Patient Heath Questionnaire 9 (PHQ-9) was used to assess the degree of depression and suicidal risk. Therapeutic adherence was assessed using the Morisky questionnaire. Data were analyzed using SPSS version 23 software. Qualitative variables were expressed as numbers and percentages, and quantitative variables as means and standard deviations. Statistical tests were used according to their applicability criteria. For all tests, the significance threshold was set at 0.05. **Results:** A total of 150 patients were consulted, constituting the sample size. The prevalence of depression and suicidal risk was 32%. These patients had an average age of 42.83 ± 10.24 years, were female (n = 101; 67.3%), Christian (n = 97; 64%), single (n = 68; 45.3%). Stigmatization (n = 75; 50%) was the reason for at-

tempted suicide. HIV was perceived as treatable (n = 103; 68.7%), unlucky (n = 62; 41.3%). Patients were WHO stage 1 (n = 105; 70%). RS was present in 47 cases (31.3%). Factors associated with depression and suicidal risk were age ($p = 0.000$), residence ($p = 0.028$), suicide attempt ($p = 0.000$), desire to procreate ($p = 0.000$) and ARV (antiretrovirals) side effects ($p < 0.001$). **Conclusion:** The prevalence of depression and suicidal risk was high, in line with stigma and socio-economic conditions. The associated factors were in line with those identified in the literature. Mental health needs to be integrated into the overall care of people living with HIV.

Keywords

Depression, Suicidal Risk, HIV/AIDS, Prevalence, Associated Factors

1. Introduction

The neurological disorders observed in HIV infection are partly linked to the neurological tropism of the virus, which has been evolving chronically since the advent of antiretroviral (ARV) therapy. ARV side effects may also be responsible. In Europe as in Africa, people living with HIV are depressed to varying degrees, and the risk of suicide is frequent when discrimination, rejection in the immediate environment and lack of support come to the fore [1] [2]. A similar study in Uganda found a frequency of 36% [1]. It therefore proved necessary to carry out this study, the main objective of which was to determine the prevalence and factors associated with depression and suicidal risk in adults with HIV at Brazzaville University Hospital.

2. Patients and Method

This was a descriptive, cross-sectional study with prospective data collection, from January 03, 2022 to November 30, 2022, *i.e.* a duration of eleven (11) months. A questionnaire was available in the Infectious Diseases Department and at outpatient clinics. Semi-structured interviews were conducted at the consultation site:

- 18 years of age or older;
- No previous psychiatric history;
- Receiving or not antiretroviral treatment.
- Who have freely consented to participate in the study.. Depression was assessed using the Patient Health Questionnaire 9 (PHQ-9). This is one of the assessment tools for depression and suicidal risk recommended nationwide by the National AIDS Control Program (PNLS) [3]. Based on the sum of these scores, depressive symptoms are classified as insignificant (score 0 - 4), mild (5 - 9), moderate (10 - 14), moderately severe (15 - 19), and severe (20 - 27). Medication compliance was assessed using the Morisky Medication Adherence Questionnaire [3]. Data were collected and analyzed using SPSS version 23 software.

Quantitative variables were expressed as means with standard deviations, and qualitative variables as numbers and percentages. To identify factors associated with depression and suicidal risk, a univariate analysis was carried out, *i.e.* the variables of interest were cross-tabulated with the explanatory variables. Odds ratios (OR) with their 95% confidence intervals were estimated to assess the strength of the association between the variable of interest and the explanatory variable. To account for confounding factors, binary logistic regression was performed. All variables with significant p-values were included in the logistic regression model. The Pearson chi-2 test was used to compare proportions. When the theoretical number of participants was less than 5, the Fisher Exact test was used. For all tests, the required significance level was set at 0.05.

3. Results

The prevalence of depression and suicidal risk was 32% respectively. The average age of the patients was 42.83 ± 10.24 years. The majority were in the 30-55 age group (n = 100; 66.7%). They were female (n = 101; 67.3%), male (n = 49; 32.7%), with a sex ratio of 0.5. There were Christians (n = 97; 64%), non-believers (n = 40; 26.7%). Singles (n = 68; 45.3%) and common-law couples (n = 32; 21.3%) accounted for more than half the cases. Stigmatization (n = 75; 50%) was the main reason for attempting suicide (**Figure 1**). HIV was discovered during hospitalization (n = 37; 55.3%) and perceived as treatable (n = 103; 68.7%), unlucky (n = 62; 41.3%). Pre-test counseling had not been done (n = 40; 26.7%). HIV was perceived as treatable (n = 103; 68.7%), unlucky (n = 62; 41.3%). Patients were WHO stage 1 (n = 105; 70%). Consumption of toxic substances was noted in 38% (n = 57), including cannabis (n = 7; 12.3%). The desire to procreate was present in 65 cases (43.3%). ART was a combination of TDF + 3TC + DTG (n = 74; 51.3%). Distance between ART site and home was > 10km in 54.4% (n = 82) of cases. Therapeutic compliance was poor in 17% (n = 26) of cases. Depression (**Table 1**) was present in 49 cases (32.6%). SR was present in 47 cases (31.3%). Factors associated with depression and suicidal risk were age (p = 0.000), residence (p = 0.028), suicide attempt (p = 0.000), desire to procreate (p = 0.000) and ARV side effects (p = 0.000) (**Table 2** and **Table 3**).

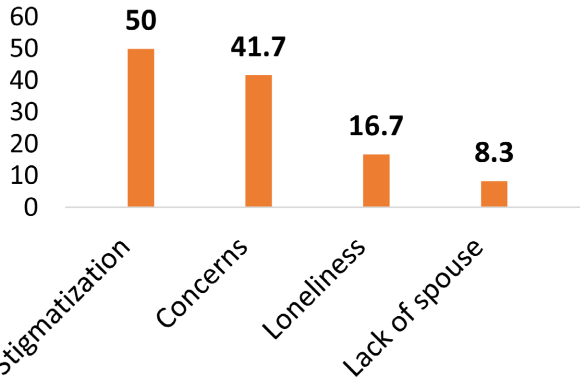

Figure 1. Different reasons for attempted suicide among people living with HIV.

Table 1. The PHQ questionnaire-9.

Over the past 2 weeks, how often have you been bothered by the following problems? *(Please tick (✔) your answer)*	**Never 0**	**Several Days 1**	**More than half the time 2**	**Almost every day 3**
1. Little interest or enjoyment in doing things				
2. Feeling sad, depressed or hopeless				
3. Difficulty falling or staying asleep, or sleeping too much				
4. Feeling tired or lacking energy				
5. Poor appetite or overeating				
6. Having a low opinion of oneself, or feeling like a failure, or having disappointed one's family or oneself.				
7. Difficulty concentrating, for example, when reading the newspaper or watching television				
8. Moving or speaking so slowly that others might have noticed. Or, on the contrary, being so agitated that you could hardly hold still as usual.				
9. Thinking it would be better to die or consider harming yourself in some way				
Total per column	+	+	+	+
Cumulative totals			/27	

Table 2. Distribution of patients according to therapeutic aspects associated with suicidal risk.

	Suicide risk		**OR [IC95%]**	**p-value**
	Yes	**No**		
AEG*				
yes	11 (37.9)	18 (62.1)	1.44 [0.62 - 3.36]	0.394
No	36 (29.8)	85 (70.2)		
Undernutrition				
Yes	9 (27.3)	24 (72.7)	1.80 [0.70 - 4.61]	0.220
No	38 (32.5)	79 (67.5)		
Opportunistic infections				
Yes	10 (34.5)	19 (65.5)	1.19 [0.51 - 2.82]	0.684
No	37 (30.6)	84 (69.4)		
WHO classification				0.360
Stage I	30 (28.3)	76 (71.7)	1	
Stage II	9 (45.0)	11 (55.0)	2.07 [0.78 - 5.51]	0.188
Stage III	4 (26.7)	12 (73.3)	0.92 [0.27 - 3.12]	1.000
Stage IV	4 (44.4)	5 (55.6)	2.03 [0.51 - 8.06]	0.446

Altered general condition.

Table 3. Associated factors of depression.

	Depression		OR [IC95%]	p-value
	Yes	No		
Age range				0.000
18 - 29	15 (71.4)	6 (28.6)	33.75 [6.04 - 188.54]	0.000
30 - 41	20 (46.5)	23 (53.5)	11.74 [2.48 - 55.66]	0.000
Education level				0.002
Primary	2 (7.1)	26 (92.9)	0.08 [0.02 - 0.41]	0.001
Marital status				0.000
Widower	1 (4.0)	24 (96.0)	0.09 [0.01 - 0.88]	0.026
Residence				
Urban	7 (35.9)	84 (64.1)	4.76 [1.05 - 21.49]	0.028
Suicide attempts	10 (83.3)	2 (16.7)	12.69 [2.66 - 60.57]	0.000
Use of toxic substances	26 (45.6)	31 (54.4)	2.55 [1.26 - 5.15]	0.008
Desire to procreate	39 (60.0)	26 (40.0)	11.25 [4.93 - 25.69]	0.000
AEG	18 (62.1)	11 (37.9)	18 (62.1)	0.000
Under nutrition	13 (61.9)	8 (38.1)	13 (61.9)	0.002
Opportunistic pathologies	15 (51.7)	14 (48.3)	15 (51.7)	0.015
Undesirable effects	21 (55.3)	17 (44.7)	Side Effects	0.000

4. Discussion

4.1. Methodological Analysis

The prospective nature of the present study, coupled with the unique setting in which the collection of information from adults living with HIV took place, did not allow us to collect previous information from adults diagnosed and treated both at the CHU and elsewhere. This methodological difficulty suggests some of the biases encountered.

Nevertheless, the present study has enabled us to lift the veil on the place occupied by depression and suicidal risk in HIV patients.

4.2. Epidemiological Aspects

The prevalence of depression and suicidal risk among adults living with HIV in our study is high (32.7% and 31.3%). Similar rates have been observed in Nigeria and Ethiopia [4] [5], and appear to be higher than in south Correa [6].

The methodological differences specific to the authors who have tackled the problem of depression in different geographical situations largely justify the rates observed in the sub-region as elsewhere. The prevalence of suicidal risk among people living with HIV remains high when non-specific assessment scales are used. These data are in line with those found in the literature.

The vast majority of patients were young adults with a mean age of 42.83 ± 10.24 years. This is a sexually active population category always in search of a fulfilling social life as reported at sub-regional level by Ossibi Ibara *et al.* in Congo 2018, Ngum *et al.* in Cameroon in 2017 and Nyongessa *et al.* in Kenya in 2019 [7] [8]. In France, on the other hand, it is subjects over 50 years of age in connection with the increase in life expectancy in this population category [9]. Females continue to pay the heaviest price for HIV/AIDS, as found in the present study. This finding is in line with the feminization of HIV infection as matched by previous studies by Ossibi Ibara *et al.* in Congo in 2018 and Nouhoum *et al.* in Mali in 2022, which found a female proportion of 68% and 70% respectively [7] [10]. More than half the population had secondary education in 58.7% of csa. Our results are comparable to those found in the same department in 2020 [10] qu. It would seem that the level of education partly influences acceptability and adherence to HIV follow-up, as reported elsewhere. Suicide attempts were reported in 12 patients, or 8% of the population. Stigmatization was the main reason for suicide attempts among infected people. It was found that the majority of patients were judged negatively in their sexual experience, suggesting the possibility of social exclusion. HIV-related stigmatization was poorly experienced by participants in all spheres of life: family, professional and even within the community. These took the form of a series of stigmatizing attitudes and behaviors on the part of family members, such as separation of personal belongings including clothing and cooking utensils from those of other family members, separation from children, avoidance, stereotyping or negative labeling, and expulsion from the home. So many reasons justify this percentage of suicide attempts. Similar results were reported by Njejimana *et al.* in Burundi in 2021 [11], Affo Mingnimo *et al.* in Benin in 2019 [12], Fauk *et al.* in Indonesia in 2021 [13]. More than half of patients did not know their serostatus on admission, thus distorting the UNAIDS target of 95% of HIV-positive people knowing their serostatus [14].

4.3. Clinical Aspects

Patients living with HIV were seen at the stage of altered general condition, as reported in the African literature [3] [15]. The low socio-economic level characterizing patients in Africa, stigmatization as signified, beliefs with its corollary of late consultations of health structures partly justify the advanced state of the disease in patients seen in consultation. In all, 22% (BMI < 18.5) of participants were malnourished. Our results are similar to those obtained in the same department in. 2018 [16], but inferior to those of Camara *et al* in Guinea-Conakry [17], Deshmukh *et al* in India in 2017 [18]. It would appear that nutritional status influences mental health in patients living with HIV, and vice versa.

Pulmonary tuberculosis was the most frequent opportunistic infection among patients, and in significant proportions. These data are similar to those obtained in the literature [16]. Indeed, pulmonary tuberculosis is still the leading oppor-

tunistic infection in sub-Saharan Africa, in a context of low socio-economic status and promiscuity.

ART was administered to over 96% of patients, as recommended by UNAIDS [14]. The combination of Tenofovir + lamivudine and Dolutegravir was the first-line treatment for most patients (51.4%). According to the World Health Organization, integrase inhibitors like Dolutegravir should be positioned in the first-line setting to minimize the risk of selecting resistant mutants and to reduce viral load very rapidly in newly-treated patients [19]. This treatment was poorly observed in 17% of cases. The expression of depressive symptoms such as loss of interest, hopelessness, lack of energy and lack of concentration observed in depressive disorders is likely to have contributed to lower compliance in participants suffering from depression.

Higher proportions of medication non-adherence have been reported elsewhere [3] [20] [21]. These differences may be explained in part by the different assessment tools used by different authors.

5. Associated Factors

The associated factors identified were those found in the literature. Young age, as a risk factor for psychiatric morbidity, was reported in Cameroon and Guinea-Conakry [17] [20]. A suicide attempt was associated with the onset of psychiatric disorders, as reported in Ethiopia and Malawi [5]. This finding did not differ by region, as it was also reported in Argentina by Mandell, in South Korea by Shim and in France by Carrieri [22] [23] [24]. Alcohol and cannabis consumption were associated with depression. Patients justified these habits as the only means of overcoming the rejection suffered in the immediate environment and discrimination, as already reported in South Africa [25]. The consumption of these toxic substances has been shown to be associated with the occurrence of suicidal risk. Indeed, these substances increase disinhibition and impulsivity, which can then potentiate the act of suicide. Our results are comparable to those found by Mandell *et al.* in Argentina in 2019 [22], where 23% of participants with alcohol abuse reported having had suicidal thoughts or a suicide attempt in the 30 days preceding the study. In France and the USA, Hentzien and Durban respectively reported on the close link between substance abuse and suicidal risk among people living with HIV [9] [26]. Setting up addictology services for this segment of the population is necessary, even urgent, if we are to provide comprehensive care for PLWHA. With regard to the desire to procreate, the misconception that HIV-infected girls of childbearing age are unable to give birth to a child is a source of concern and worry. Psychological problems such as depression and the risk of suicide are common, as in Africa and France [9] [17]. The presence of opportunistic infections, mainly of neurological origin, was associated with these disorders. Indeed, since HIV is a neurotropic virus, the nervous system is faced with this type of chronically evolving virus, hence the possibility of neuropsychiatric impairment either directly linked to viral replication in this

type of sanctuary, or with an opportunistic encephalic infection such as tuberculosis or cryptococcosis. This finding is supported by studies by Abadiga *et al.* in Ethiopia in 2018 [27], Liu *et al.* in China in 2018 [28].

Our study reports the association of psychological disorders with the adverse effects of antiretroviral drugs. Patients receiving a combination including Efavirenz were likely to develop these disorders. The psychiatric disorders generated by this molecule, associated with a suicidal tendency in adult patients starting ART early, are no longer in need of demonstration, as they have been reported by several authors from different regions [27] [29] [30].

6. Conclusions

The prevalence of depression and suicidal risk is relatively high in our study. These are young adults living with HIV, predominantly female and subject to stigmatization. The associated factors identified are in line with the literature. Younger age, history of suicide attempts due to stigmatization, use of toxic substances (alcohol and cannabis), desire to have children, altered general condition, undernutrition with a BMI < 18.5, presence of an opportunistic infection and side effects of ARVs were associated with psychiatric disorders.

The development of new, simplified tools for the assessment of these disorders in PLWHA, the establishment of addictology services, the consideration of mental health in this population category, as well as early detection and management of HIV infection, would largely improve patients' quality of life.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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