

Factors Associated with Depression among People Living with HIV in 2 Hospitals in Ebolowa, Cameroon; A Cross-Sectional Study

Christian Eyoum^{1,2*}, Enesta Moba Yentoh¹, Chanceline Bilounga Ndongo¹, Ulrich Boris Bisay Souhe³, Yannick Messakop³, Michel Ekono^{1,4}, Annick Mélanie Magnerou¹, Richy Feudjio¹, Jonas Guy Basseguin Atchou¹, Charlotte Tchente Nguéfack^{1,5}

¹Faculty of Medicine and Pharmaceutical Sciences, University of Douala, Douala, Cameroon

²Department of Mental Health, Douala Laquintinie Hospital, Douala, Cameroon

³Faculty of Medicine and Pharmaceutical Sciences, University of Ebolowa, Ebolowa, Cameroon

⁴Department of Gynecology and Obstetrics, Ebolowa Regional Hospital Center, Ebolowa, Cameroon

⁵Department of Gynecology and Obstetrics, Douala General Hospital, Douala, Cameroon

Email: *eyoumchristian1@gmail.com

How to cite this paper: Eyoum, C., Moba Yentoh, E., Bilounga Ndongo, C., Bisay Souhe, U.B., Messakop, Y., Ekono, M., Magnerou, A.M., Feudjio, R., Basseguin Atchou, J.G. and Tchente Nguéfack, C. (2026) Factors Associated with Depression among People Living with HIV in 2 Hospitals in Ebolowa, Cameroon; A Cross-Sectional Study. *Open Journal of Psychiatry*, 16, 179-188.

<https://doi.org/10.4236/ojpsych.2026.162013>

Received: January 8, 2026

Accepted: March 21, 2026

Published: March 24, 2026

Copyright © 2026 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Introduction: Depression is a critical psychiatric comorbidity among People Living with HIV (PLWHIV), recognized as an independent risk factor for poor ART adherence and clinical outcomes. The objective of this study was to determine the prevalence and independent predictors of depression among PLWHIV receiving care in Ebolowa, Cameroon. **Framework and Methodology:** Our study was a descriptive cross-sectional design conducted from [Start Date] to [End Date] among 250 adult PLWHIV attending an HIV treatment center in Ebolowa, Cameroon. Data collected included sociodemographic, clinical (viral load, ART history), and psychological (anxiety, social support) variables. Bivariate and multivariate logistic regression were used to identify independent predictors of depression. **Results:** The prevalence of depression was 22.4%. Multivariate logistic regression, poor social support (OR = 2.689, $p = 0.004$), significantly increased the risk of depression. Factors indicative of good adherence, such as daily ART intake (OR = 0.122, $p < 0.001$), were also protective. **Conclusion:** These findings underscore the central role of successful therapeutic outcomes and social integration in shielding PLWHIV from depression. We recommend integrating routine mental health screening and enhanced adherence support into standard HIV care to address this prevalent comorbidity.

Keywords

Depression, HIV, Viral Load, Adherence, Social Support, Cameroon,

Comorbidity

1. Introduction

Depression is one of the most common and debilitating psychiatric comorbidities in People Living with HIV (PLWHIV), with prevalence rates ranging widely globally, but often significantly higher in sub-Saharan African settings. Undetected and untreated depression is linked to poor Antiretroviral Therapy (ART) adherence, faster disease progression, and increased mortality.

In this study conducted among PLWHIV in Ebolowa, Cameroon, the prevalence of depression was found to be 22.4% (with 21.6% moderate and 0.8% severe), highlighting its status as a critical public health concern. The study population (N = 250) was predominantly female (68.4%) with an average age of 45.20 ± 13.98 years. Clinically, the cohort demonstrated high treatment success, with 91.6% having an undetectable viral load and 96.4% in WHO clinical stage 1. However, despite this high level of clinical control, the population reported significant psychological distress: 74.0% screened positive for anxiety and a high percentage reported poor social support (60.0%). Furthermore, a history of poor adherence was noted, with 8.4% of participants admitting to having previously stopped ART (Table 1).

Table 1. Distribution factors associated with depression (bivariate analysis).

Factor Category	Variable	Ratio (OR)	p-value	Interpretation
Risk Factors	Age: 31 - 40 years	2.710	0.003	2.7× higher odds of depression compared to the reference group
	HIV duration: <1 year	2.956	0.005	3× higher odds of depression
	Detectable viral load	4.959	<0.001	5× higher odds
	Discontinued treatment	3.617	0.004	3.6× higher odds of depression
	Suicidal ideation	2.130	0.028	2.1× higher odds of depression
	Anxiety	2.542	0.002	2.5× higher odds of depression
	Poor social support	2.689	0.004	2.7× higher odds of depression
Protective Factors	≥41 years	0.506	0.044	Associated with lower odds of depression (combined ≥41 age groups)
	HIV duration: >10 years	0.380	0.004	62% reduction in the odds of depression
		0.142	<0.001	86% reduction in odds
	Daily ART intake	0.122	<0.001	88% reduction in the odds of depression
	Moderate social support	0.413	0.010	59% reduction in the odds of depression
	Disclosure of serostatus	0.403	0.004	60% reduction in the odds of depression

Given the high rates of clinical success juxtaposed with significant psychological burden, this study sought to go beyond simple prevalence and identify which factors—clinical adherence failures, comorbidities like anxiety, or socioeconomic stability—independently predict depression. Understanding these independent predictors is crucial for developing targeted, integrated mental health interventions within the national HIV care protocol.

2. Framework and Method

2.1. Study Framework

The treatment centers of the Ebolowa Regional Hospital and the Ebolowa Regional Hospital Center served as a framework for our study. Ebolowa, capital of Cameroon's South Region, has a population of 242,665. Its health district has a density of about 42.13 inhabitants per km².

2.2. Study Method

2.2.1. Type and Period of Study

It was a cross-sectional study. The study ran from February 1st 2025 to 31 May 2025, *i.e.*, a duration of 4 months.

2.2.2. Study Population and Sampling

Our study population consisted of:

Target population: people living with HIV in Ebolowa.

Source population: the patients followed at treatment centers of the Ebolowa Regional Hospital and the Ebolowa Regional Hospital Center.

The sampling had been a reasoned choice of the Southern region on the basis of its HIV prevalence.

➤ Inclusion criteria

The study included individuals (PLWHIV) aged 21 years and older who agreed to participate.

➤ Non-inclusion criteria

Individuals with HIV/AIDS who had a general health problem that could significantly impact their mental status were excluded.

2.2.3. Data Collection

The patients diagnosed with HIV and managed in the Ebolowa Regional Hospital and Ebolowa Regional Hospital Center were reviewed during their regular checkup. Data was collected using a questionnaire designed by the researcher. Data concerning epidemiology, demographics, relevant past history, status, age, educational level, children, living status, stigma, social support, duration of illness, partner status, occupation and data related to depression and anxiety using the Hospital Anxiety and depression scale (HADS) in English and French versions verified with cut offs >11 with 8-10: mild, 11 - 15: moderate and >15: severe, were collected. The administration of the questions took between 15 and 20 minutes for each respondent. The survey sheet had been tested and validated. Participants were approached

during their routine checkups, which took place monthly. The data collection was biased with personal problems affecting the depression and anxiety scores in participants, which was corrected with a re-evaluation 1 week after.

2.2.4. Data Analysis

Data was analyzed using IBM Statistic's Statistical Package for Social Science (SPSS) 26.0. The table and the figure had been made using Microsoft Excel 2016.

2.3. Ethical Aspects

The authorization of the management of both hospitals, as well as the free and informed consent of each respondent, had been obtained before the administration of the questions. The anonymity and the confidentiality were respected.

3. Results

Of the 260 PLWHIV approached, 250 (96.15%) had met the inclusion criteria.

3.1. Study Population Characteristics

Women accounted for 68.4% of participants, that is a F/M sex ratio of 2.164. The average age was 45 years, with extremes ranging from 21 to 83 years. Ninety-one were aged 51 and over (36.4%). One hundred and thirty-two were single (52.8%). One hundred and forty-five (58%) people had three or fewer children and one hundred and thirty (52%) lived outside Ebolowa. The vast majority were of the Christian religious persuasion (97.6%) and one hundred and thirty-nine (55.6%) had achieved at least secondary education. A significant proportion lived with their families (73.6%), although some lived alone.

3.2. Prevalence of depression

The overall prevalence of depression in the study population was 22.4%.

3.3. Factors Associated with Depression

The prevalence of depression in the study was 22.4%. A large proportion of participants displayed high scores for anxiety (60.0% mild to severe) and reported poor social support (60.0%). The odds of depression are highest with a 5-fold increase due to detectable viral load and are significantly elevated by discontinued ART (3.6×) and poor social support (2.7×). Individuals with anxiety or suicidal ideation also face elevated odds. Conversely, 88% lower odds are associated with daily ART intake (the strongest mitigating factor), 86% lower odds with an undetectable viral load, and 60% lower odds with serostatus disclosure. Longer HIV duration (>10 years) and moderate social support offer significant mitigation, highlighting that therapeutic success and social connection are key protective buffers.

After a multivariate analysis, poor social support was found to be a predictive factor associated with people living with HIV (people with poor social support had 2.8× chances of having depression).

4. Discussion

4.1. Study population characteristics

The distribution of PLWHIV by gender showed a predominance of women, representing 68.4%. This observation is in line with the conclusions of Duko *et al.*, Damtie *et al.*, Adedeji *et al.*, Parcesepe *et al.*, and Madundo *et al.*, who were respectively 65.8%, 57%, 61.03%, 66.4% and 61.03% of females [1]-[5]. On the contrary of studies that showed lower prevalences done by Yu *et al.* [6], Ophinni *et al.* [7], Algoodkar *et al.* [8], Huang *et al.* [9], and Beyene *et al.* [10], which were 3.9%, 34.9%, 35%, 20.3%, and 41.8% respectively [7]-[10]. This may be attributed to a combination of biological, social, and economic factors that increase women's vulnerability to HIV infection. In many sub-Saharan African contexts, gender inequalities, limited access to education, poverty, and unequal power dynamics in relationships contribute to higher HIV prevalence among women. Moreover, women are more likely to utilize healthcare services, including HIV testing and treatment, which may increase their representation in such studies. On the other hand, studies from Asia, such as those conducted in China, Indonesia, and India, reported a lower proportion of female participants. These differences may reflect regional variations in transmission patterns, with heterosexual transmission being more prevalent in sub-Saharan Africa and injecting drug use or male-to-male transmission more common in parts of Asia, where men often represent a larger share of the HIV-positive population. Cultural factors and stigma may also influence who seeks care and is captured in research data, further contributing to these variations.

The average age was 45, extremes: 21 - 83. These results are in line with those found by other researchers who have worked on the subject in different regions of the world. This is in accordance with Adedeji *et al.* [3], who observed an average age of 44.3 ± 11.7 , and Ngum *et al.* [11] an average age of 40.9 ± 9.7 . The similarity in average age across studies likely reflects the typical demographic profile of people living with HIV (PLWHIV) receiving care, who are often in their middle adulthood. This age group corresponds to the period of higher sexual activity and, consequently, higher risk of HIV acquisition.

Approximately 55.6% of participants had attained secondary level education, which is higher than the proportions reported in several other studies. For instance, studies conducted by Beyene *et al.* in Ethiopia, Adeoti *et al.*, Adedeji *et al.*, Madundo *et al.* and Damtie *et al.* reported secondary education levels of 24.8%, 34%, 26.1%, 18.01%, and 24.7%, respectively [2] [3] [5] [10] [12]. This might be due firstly to differences in study settings, such as urban versus rural populations, which can significantly influence education levels, as urban areas generally have better access to educational facilities and higher school attendance rates. Secondly, the time periods during which the studies were conducted may also play a role, as educational access and literacy rates may have improved over time in some regions. Additionally, variations in sampling techniques and inclusion criteria could lead to differences in participant demographics, including education level. Lastly,

national policies and investments in education, along with socio-economic development, may contribute to improved educational attainment in certain areas, which could explain the higher rate observed in the current study.

The percentage of unemployment in our study group accounted for 59.2%, which can be explained by the fact that Stigma and discrimination associated with HIV can limit employment opportunities, while chronic illness and related health complications may reduce individuals' ability to work consistently. Additionally, many PLWHIV may belong to informal sectors or subsistence-level jobs that are not formally recognized as employment. The number of people who had an average monthly income was found to be 48.4% of our population, which had no link with their status but was due to the study area.

4.2. Clinical and Therapeutic Characteristics

Around one-fifth of PLWHIV that is 22.4% were depressed; similar results have also been reported in various studies around the world. Ngum *et al.* [11] found 26.7%, Camara *et al.* [13] found 16.9%, Dua *et al.* [14] found 20.9%. These disparities between studies could be explained by methodological differences, which relate mainly to the choice of measurement instruments and the scores used to evaluate the severity of anxiety and depressive symptoms. Thus, some authors considered only high and severe anxiety and depression scores, while others included all scores, including mild ones, medium scores, leading to higher prevalence rates. And by difference in sample sizes, with 363 PLWHIV and 418 PLWHIV recruited by Duko *et al.* [1] in Ethiopia.

The proportion of participants with HIV duration of less than one year was 12.4% in our study, which is similar to the 10.9% reported by Beyene *et al.* [10]. However, this figure is lower than that found by Seth *et al.* [15], who found 26%, and Huang *et al.* [9], who found 36.9%. The lower proportion of participants with HIV duration under one year in our study (12.4%) compared to higher rates reported in Kenya, Namibia, Tanzania (26%), and China (36.9%) may be influenced by several factors. Variations in HIV testing practices and early diagnosis campaigns across regions could affect the identification of newly diagnosed individuals. In settings with more robust HIV screening programs, a higher percentage of recently diagnosed cases would be expected. Additionally, differences in healthcare access and public awareness may lead to delays in diagnosis in some populations, resulting in fewer individuals being classified as having HIV for less than one year. Differences in study design, including recruitment methods and definitions of disease duration, may also contribute to these discrepancies.

In our study, 2.8% of participants had a detectable viral load, while 91.6% had an undetectable viral load. This contrasts sharply with the findings of Huang *et al.* [9], who reported 43.4% detectable and 40.8% undetectable viral loads. The markedly lower proportion of detectable viral load in our study suggests better viral suppression among participants, which may be attributed to more effective antiretroviral therapy (ART) adherence, improved access to healthcare, and robust

HIV management programs in our setting. In contrast, the higher detectable viral load reported by Huang *et al.* could be influenced by differences in treatment availability, healthcare infrastructure, or patient adherence challenges in their study population. Additionally, variations in the timing of viral load measurement, laboratory techniques, lost sight and study inclusion criteria might also explain these disparities.

Stage 1 HIV disease accounted for 96.4% of our study population, closely aligning with findings by Damtie *et al.* (95.5%) and Gizachew *et al.* (89.6%) [2] [16]. In contrast, Beyene *et al.* [10] reported a much lower proportion of 20.4% in a similar population. The high proportion of participants at Stage 1 HIV in our study (96.4%) compared to the much lower figure reported by Beyene *et al.* (20.4%) may be due to differences in the timing of diagnosis and access to healthcare services. Additionally, differences in the populations studied—such as urban versus rural, or clinic-based versus community-based samples—could influence these findings.

Daily drug intake adherence was reported by 94.0% of participants, which is substantially higher than the 5% reported by Damtie *et al.* [2]. The significantly higher daily drug intake observed in our study may be attributed to improved access to antiretroviral therapy (ART) services in our setting. Enhanced healthcare infrastructure and follow-up mechanisms might encourage consistent medication use. Conversely, the low adherence rate reported by Damtie *et al.* [2] could reflect barriers such as limited access to medications, lack of counseling, stigma, or socioeconomic challenges faced by patients in their study population. Differences in measurement methods for adherence and study design might also contribute to this discrepancy.

In our study, 23.6% of participants reported experiencing drug side effects, which is notably higher than the 7.1% reported by Beyene *et al.* [10]. The higher prevalence of reported drug side effects in our context may be due to differences in ART regimens, pharmacovigilance practices, or participant awareness and reporting of symptoms. In settings with better patient education and routine monitoring, individuals may be more likely to recognize and report side effects. Additionally, variations in the availability of newer, better-tolerated ART drugs between settings can influence the prevalence of side effects. The lower rate reported by Beyene *et al.* may also be due to underreporting, differences in study methodology, or cultural perceptions regarding medication-related symptoms.

Treatment discontinuation was reported by 8.4% of participants in our study, which is comparable to findings by Gizachew *et al.* (10.4%) and Camara *et al.* (12.5%) [13] [16]. However, this contrasts with the study by Huang *et al.*, where 88.8% of participants had not discontinued treatment, indicating a much lower discontinuation rate. The similarity in discontinuation rates between our study and those conducted in Ethiopia and Conakry may reflect common challenges in sub-Saharan African settings, such as limited access to continuous care, stigma, and socioeconomic barriers. On the other hand, the lower discontinuation rate observed in China could be attributed to stronger healthcare infrastructure, greater

accessibility to ART, and more consistent patient follow-up. Additionally, national health policies, support systems, and adherence counseling programs in China may contribute to better retention in treatment compared to some African contexts. Differences in study design, population characteristics, and definitions of “discontinuation” may also influence these findings.

4.3. Predictive Factor Linked to Depression among People Living with HIV

The analysis of psychosocial factors in people living with HIV (PLWHIV) reveals that poor social support is not merely correlated with distress, but acts as a significant and independent risk factor for depression. This finding, where participants with poor support were nearly three times more likely to experience depression (Adjusted OR = 2.821; P = 0.022), strongly validates the necessity of integrating social assessments into clinical HIV care across sub-Saharan Africa (SSA). The magnitude of this risk is highly consistent with international and regional research. Across countries like Ethiopia and Uganda, lack of adequate social support is repeatedly cited as a powerful determinant of common mental disorders (CMDs). This consistency suggests that the psychosocial mechanisms linking isolation to depression are robust and transcend variations in national healthcare systems. Social support functions as a crucial psychological shield, or buffer, against the chronic stress, stigma, and economic challenges inherent in living with HIV. When this support system fails, the individual is left highly vulnerable to mental health deterioration. In SSA, this failure is often rooted in pervasive HIV-related stigma. Fear of discrimination drives non-disclosure, which in turn cuts off the individual from their essential support networks (family, friends). Lack of support exacerbates feelings of hopelessness, escalating the need for urgent mental health intervention.

5. Conclusions

This study aimed to assess the prevalence and factors associated with depression among PLWHIV. At the end of this study, we concluded that:

Women constituted two-thirds of our population, with a median age of 45 years. The majority of participants were unemployed and had a monthly income below or moderately above the minimum range. A higher frequency had been living with HIV for > 10 years, and almost all had an undetectable viral load.

One PLWHIV out of 5 presented a depressive state, detected by HADS. Risk factors for depression were: being aged between 31 - 40 years, HIV duration < 1-year, detectable viral load, discontinued treatment, suicidal ideations, anxiety and poor social support, meanwhile protective factors found were: aged >41 years, known hypertensive, HIV duration > 10 years, undetectable viral load, being on 1st line treatment, daily drug intake, moderate social support. Poor social support was a predictive factor of depression. Therefore, a systematic screening for depression and anxiety in PLWHIV should be done in order to provide a general therapeutic approach to PLWHIV.

6. Limitations

This study has certain limitations that must be acknowledged. First, the cross-sectional design allows us to identify factors associated with depression among people living with HIV in Ebolowa, but it does not allow for the establishment of causality. For example, while we may observe a link between poor socio-economic status and mental health, we cannot definitively conclude whether financial hardship leads to depression or if depressive symptoms hinder a patient's ability to maintain a livelihood. Additionally, the results may be affected by information bias regarding self-reported depression symptoms and medication adherence. Given the significant social stigma surrounding mental health and HIV in this region, participants may have underreported their level of distress or overreported their adherence to appear "compliant" to researchers, which could lead to an underestimation of the true burden of depression in this population.

Conflicts of Interest

The authors do not declare any conflict of interest.

References

- [1] Duko, B., Toma, A., Asnake, S. and Abraham, Y. (2019) Depression, Anxiety and Their Correlates among Patients with HIV in South Ethiopia: An Institution-Based Cross-Sectional Study. *Frontiers in Psychiatry*, **10**, Article No. 290. <https://doi.org/10.3389/fpsy.2019.00290>
- [2] Damtie, Y., Kefale, B., Yalew, M., Arefaynie, M., Adane, B., Edmealem, A., *et al.* (2021) Depressive Symptoms and Associated Factors among HIV Positive Patients Attending Public Health Facilities of Dessie Town: A Cross-Sectional Study. *PLOS ONE*, **16**, e0255824. <https://doi.org/10.1371/journal.pone.0255824>
- [3] Adedeji, W.A., Ma, Q., Raji, A.M., Cha, R., Rasaki, O.M., Hutson, A., *et al.* (2023) Prevalence of Depression among People Living with HIV in Rural Hospitals in South-Western Nigeria-Association with Clinico-Demographic Factors. *AIDS Research and Therapy*, **20**, Article No. 89. <https://doi.org/10.1186/s12981-023-00586-0>
- [4] Parcesepe, A.M., Remch, M., Dzudie, A., Ajeh, R., Nash, D., Anastos, K., *et al.* (2021) Depressive Symptoms, Gender, Disclosure, and HIV Care Stage among People Living with HIV in Cameroon. *AIDS and Behavior*, **26**, 651-661. <https://doi.org/10.1007/s10461-021-03425-3>
- [5] Madundo, K., Knettel, B.A., Knippler, E. and Mbwambo, J. (2023) Prevalence, Severity, and Associated Factors of Depression in Newly Diagnosed People Living with HIV in Kilimanjaro, Tanzania: A Cross-Sectional Study. *BMC Psychiatry*, **23**, Article No. 83. <https://doi.org/10.1186/s12888-022-04496-9>
- [6] Yu, Y., Luo, B., Qin, L., Gong, H. and Chen, Y. (2023) Suicidal Ideation of People Living with HIV and Its Relations to Depression, Anxiety and Social Support. *BMC Psychology*, **11**, Article No. 159. <https://doi.org/10.1186/s40359-023-01177-4>
- [7] Ophinni, Y., Adrian, Siste, K., Wiwie, M., Anindyajati, G., Hanafi, E., *et al.* (2020) Suicidal Ideation, Psychopathology and Associated Factors among HIV-Infected Adults in Indonesia. *BMC Psychiatry*, **20**, Article No. 255. <https://doi.org/10.1186/s12888-020-02666-1>
- [8] Algoodkar, S., Kidangazhiathmana, A., Rejani, P.P. and Shaji, K.S. (2017) Prevalence

- and Factors Associated with Depression among Clinically Stable People Living with HIV/AIDS on Antiretroviral Therapy. *Indian Journal of Psychological Medicine*, **39**, 789-793. https://doi.org/10.4103/ijpsym.ijpsym_364_17
- [9] Huang, X., Meyers, K., Liu, X., Li, X., Zhang, T., Xia, W., *et al.* (2018) The Double Burdens of Mental Health among AIDS Patients with Fully Successful Immune Restoration: A Cross-Sectional Study of Anxiety and Depression in China. *Frontiers in Psychiatry*, **9**, Article No. 384. <https://doi.org/10.3389/fpsy.2018.00384>
- [10] Beyene Gebrezgiabher, B., Huluf Abraha, T., Hailu, E., Siyum, H., Mebrahtu, G., Gidey, B., *et al.* (2019) Depression among Adult HIV/AIDS Patients Attending ART Clinics at Aksum Town, Aksum, Ethiopia: A Cross-Sectional Study. *Depression Research and Treatment*, **2019**, Article ID: 3250431. <https://doi.org/10.1155/2019/3250431>
- [11] Ngum, P.A., Fon, P.N., Ngu, R.C., Verla, V.S. and Luma, H.N. (2017) Depression among HIV/AIDS Patients on Highly Active Antiretroviral Therapy in the Southwest Regional Hospitals of Cameroon: A Cross-Sectional Study. *Neurology and Therapy*, **6**, 103-114. <https://doi.org/10.1007/s40120-017-0065-9>
- [12] Adeoti, O.A., Dada, M.U. and Fadare, J.O. (2018) Prevalence of Depression and Anxiety Disorders in People Living with HIV/AIDS in a Tertiary Hospital in South Western Nigeria. *Medical Reports & Case Studies*.
- [13] Camara, A., Sow, M.S., Touré, A., Sako, F.B., Camara, I., Soumaoro, K., *et al.* (2020) Anxiety and Depression among HIV Patients of the Infectious Disease Department of Conakry University Hospital in 2018. *Epidemiology and Infection*, **148**, e8. <https://doi.org/10.1017/s095026881900222x>
- [14] Dua, D., Stubbs, O., Urasa, S., Rogathe, J., Duijinmaijer, A., Howlett, W., *et al.* (2023) The Prevalence and Outcomes of Depression in Older HIV-Positive Adults in Northern Tanzania: A Longitudinal Study. *Journal of NeuroVirology*, **29**, 425-439. <https://doi.org/10.1007/s13365-023-01140-4>
- [15] Seth, P., Kidder, D., Pals, S., Parent, J., Mbatia, R., Chesang, K., *et al.* (2013) Psychosocial Functioning and Depressive Symptoms among HIV-Positive Persons Receiving Care and Treatment in Kenya, Namibia, and Tanzania. *Prevention Science*, **15**, 318-328. <https://doi.org/10.1007/s11121-013-0420-8>
- [16] Gizachew, K.D., Chekol, Y.A., Basha, E.A., Mamuye, S.A. and Wubetu, A.D. (2021) Suicidal Ideation and Attempt among People Living with HIV/AIDS in Selected Public Hospitals: Central Ethiopia. *Annals of General Psychiatry*, **20**, Article No. 15. <https://doi.org/10.1186/s12991-021-00335-5>