ORIGINAL ARTICLE

Depression among people living with human immunodeficiency virus infection/acquired immunodeficiency syndrome in Benin City, Nigeria: A comparative study

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Abstract

Background: Depression is a common co-morbidity among persons living with human immunodeficiency virus infection/acquired immunodeficiency syndrome (HIV/AIDS) (PLWHAs). It is associated with poor treatment adherence and higher mortality rates. Few reports have, however, emanated from developing countries where socioeconomic factors may confound this association.

Materials and Methods: We conducted a cross-sectional comparative study of PLWHAs and apparently healthy staff of three LGA's. The depression module of the Schedule for the Clinical Assessment in Neuropsychiatry (SCAN) and the Beck Depression Inventory (BDI) was used to diagnose depression and depression symptom severity, respectively.

Results: Depression was commonly co-morbid among individuals with HIV/AIDS. It was five times more common in PLWHAs than in apparently healthy populations (29.3% vs. 7.3%, OR: 5.25, 95% CI: 2.50-11.76). A similar trend was observed for depression symptom severity. Among PLWHAs, depression was significantly more likely among females (OR: 7.91, 95% CI: 1.83-71.00, $P < 0.01$), those unemployed (OR: 2.94, 95% CI: 0.18-1.82, $P < 0.04$), and with an illness duration >3 years (OR: 7.90, $P < 0.0001$). Having at least one child (OR: 2.79, 95% CI: 1.25-6.16, $P < 0.001$) and living with others (OR: 4.71, 95% CI: 1.51-15.52, $P < 0.003$) significantly reduced depression risk.

Conclusion: Depression was commonly co-morbid among PLWHAs studied. Clinicians should be aware of risk factors for depression among PLWHAs in order to improve treatment outcomes.

Key words: Correlates, depression, human immunodeficiency virus infection/acquired immunodeficiency syndrome, Nigeria

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Introduction

Depression is a leading cause of disability and mortality worldwide.[1] It is highly co-morbid in human immunodeficiency virus infection/acquired immunodeficiency syndrome (HIV/AIDS).[2] Depression has been reported to be common among persons living with HIV/AIDS (PLWHAs) compared with apparently healthy populations.[3] Prevalence rates for depression among PLWHAs vary depending on the setting of the study. However, rates average between 10% and 30%.[4]

The relationship between depression and HIV/AIDS is complex. It is theorized that immune changes as a result of viral infections may be responsible.[5] Others argue that psychological adjustment to the awareness of one's HIV status may predispose to depression as well as other psychiatric disorders like anxiety, psychosis, and posttraumatic stress. Another possible mechanism is stigma.

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This is especially relevant in a developing country like Nigeria, where the illness is highly stigmatized and PLWHAs feel isolated and discriminated against.[6]

Though this area has been extensively researched in developed countries, studies in developing nations are few. With scarce resources and the high mortality recorded from HIV/AIDS in sub-Saharan Africa efforts aimed at reducing this rate should be encouraged. This study aimed to explore the prevalence of depression among PLWHAs, compare it with an apparently healthy population and identify factors that increase or reduce the risk of depression among PLWHAs.

Materials and Methods

Design

The study design was cross-sectional employing a case-comparative method.

Sample size

Using appropriate statistical formulae,[7] we calculated the sample size at an average prevalence of 27% in PLWHAs[8] and 17% in apparently healthy community samples[9] and 80% power and arrived at a sample size of 150 each for cases and for comparison group.

Participants

Cases were recruited from among PLWHAs attending the HIV Clinic at the University of Benin Teaching Hospital (UBTH). A comparison group (matched for age and sex) was recruited from among staff at three local government secretariats (Oredo, Egor, and Ikpoba-Okha) that comprise the Benin City area. To be recruited, all participants had to be at least 18 years by the time of the study and in addition to understanding the nature of the study, be able to communicate in the English language.

Ethical considerations

The study protocol was presented to the Ethics and Review Committee of the UBTH. The committee reviewed and approved the protocol. All participants were educated about the nature and purpose of the study. Written consent forms were signed voluntarily. Participants (cases) who declined were informed that there would be no untoward effects to the nature or quality of care they received.

Measures

Socio-demographic questionnaire: This was designed by the authors to capture relevant demographic variables like age, gender, occupational, and marital status as well as 14-symptom checklist to determine HIV/AIDS staging.[10]

Schedule for the Clinical Assessments in Neuropsychiatry (SCAN): The depression module of the SCAN[11] was used to ascertain a diagnosis of depression. The pencil and paper version was utilized before it was entered into a computer software of the electronic version of the SCAN to generate a diagnosis. The SCAN has been widely used for similar surveys in this country.[12]

Beck Depression Inventory (BDI): The BDI[13] was used to determine the severity of depression symptoms among individuals with a diagnosis of depression. The 21-item version was employed in this study and has also been extensively used in depression research in the country.[12]

Procedure

For both groups (cases and comparison), the questionnaire, BDI and the SCAN were interviewer administered. All three measures were administered to all the participants.

Data analysis

Data were summarized using descriptive statistics and presented in tables. Categorical and continuous comparisons were performed using the Chi-squared test (Fisher's exact where needed) as well as the Student's *t*-test. The statistical software tool; Statistical Package for Social Sciences version 11 (SPSS Inc, Chicago, Ilinois) was used and level of significance set at $P < 0.05$

Results

Socio-demographic characteristics

A majority of the cases were female, $n = 119$ (79.3%), Christians (94%) with a secondary level of education, $n = 63$ (42%). Most were employed (77.3%) and over a third were married (44%). For the comparison group, a similar pattern was observed with a majority being female, $n = 117$ (78%), Christian (91.3%) and a secondary level of education (46%) [Table 1].

About 12% of PLWHAs were living alone at the time of the study compared with 14% in the comparison group. Over a third of cases were caring for three or more children with a similar proportion observed in the comparison group. Over a quarter (26.7%) of the cases practiced unprotected sex with their partners, with a majority reporting that sexual activity was 1-2 episodes/month [Table 2].

Illness characteristics

A majority (95.3%) of PLWHAs had the type 1 variant of the HIV, with nearly half (42%) in stage 1 of the illness. Most (52%) had duration of illness between 1 and 3 years. For nearly half of the cases (44%), their partners were also HIV positive. Forty-five PLWHAs had a co-morbid illness, which comprised pulmonary tuberculosis, candidiases, genital warts, hypertension, and cerebro-vascular accidents [Table 3].

Table 1: Socio-demographic characteristics of cases and comparison groups

Variables	Cases *N* (%)	Comparison group *N* (%)
Gender		
Male	31 (20.7)	33 (22)
Female	119 (79.3)	117 (78)
Age group (years)		
18-27	38 (25.3)	40 (26.7)
28-37	56 (37.3)	52 (34.7)
38-47	35 (23.3)	38 (25.3)
48-57	19 (12.7)	20 (13.3)
58-67	2 (1.3)	-
Mean age (SD)	35.57 (9.61)	35.27 (9.01)
Religion		
Christianity	141 (94.0)	137 (91.3)
Islam	4 (2.7)	7 (4.7)
African traditional religion	3 (2.0)	5 (3.3)
Others	2 (1.3)	1 (0.7)
Level of education		
Primary	38 (25.3)	35 (23.3)
Secondary	63 (42.0)	69 (46.0)
Postsecondary	49 (32.7)	46 (30.7)
Employment status		
Employed	116 (87.3)	100 (100)
Unemployed	34 (22.7)	-
Marital status		
Single	40 (26.7)	37 (24.7)
Married	65 (43.3)	67 (44.7)
Divorced	1 (0.7)	17 (11.3)
Separated	22 (14.7)	14 (9.3)
Widow/widower	17 (11.3)	6 (4.0)
Co-habiting	5 (3.3)	9 (6.0)

Table 2: Clinical and other behavioral characteristics of cases and comparison groups

Variable	Cases *N* (%)	Comparison group *N* (%)	Statistic
Depression severity (BDI)			
None	102 (68.0)	139 (92.7)	X^2=29.18
Mild	26 (17.3)	6 (4.0)	*P*<0.001
Moderate	20 (13.3)	5 (3.3)	
Severe	2 (1.3)	-	
Depression (SCAN)			
Mild	22 (14.7)	5 (3.3)	X^2=24.83
Moderate	18 (12.0)	5 (3.3)	*P*<0.001
Severe without psychotic symptoms	2 (1.3)	1 (0.7)	
Severe with psychotic symptoms	2 (1.3)	-	
None	106 (70.7)	139 (92.7)	
Number of children			
None	50 (33.3)	33 (22.0)	X^2=5.03
1 or 2	49 (32.7)	61 (40.7)	*P*=0.08
3 or more	51 (34.0)	56 (37.3)	
Living arrangement			
Lives alone	18 (12.0)	21 (14.0)	X^2=0.27
Lives with others	132 (88.0)	129 (86.0)	*P*=0.20
Sexual activity past month			
None	60 (40.0)	39 (26.0)	X^2=22.99
1-2	67 (44.7)	52 (34.7)	
3	12 (8.0)	38 (25.3)	*P*<0.001
≥4	11 (7.3)	21 (14.0)	
Type of sexual activity			
None	60 (40.0)	39 (26.0)	X^2=25.98
Protected	50 (33.3)	25 (16.7)	*P*<0.001
Unprotected	40 (26.7)	86 (57.3)	

SCAN=Schedule for the clinical assessment in neuropsychiatry; BDI=Beck depression inventory

Prevalence of depression

Forty-four (29.3%) of the cases satisfied the criteria for a depressive disorder using the SCAN, compared with 11 (7.3%) of the comparison group (OR: 5.25, 95% CI: 2.50-11.76). Among the cases, 22 (14.7%) had a mild depressive disorder, 18 (12%) were moderately depressed, whereas 2 (1.3%) were severely depressed Table 2.

Correlates of depression among PLWHAs

Females were significantly more likely to be depressed (OR: 7.91, 95% CI: 1.83-71.00, $P < 0.01$). PLWHAs who were employed were twice as likely to be depressed compared with those unemployed (OR: 2.94, 95% CI: 0.18-1.82, $P < 0.04$). There was no significant differences in terms of age (≤37 years/>37 years), religion (Christianity/others), duration of formal education (≤12 years/>12 years), and marital status (single, widowed, divorced, separated/married, co-habiting).

PLWHAs who had at least one child were significantly less likely to have depression (OR: 2.79, 95% CI: 1.25-6.16, $P < 0.001$). Living with others was also significantly protective against having a depressive illness (OR: 4.71, 95% CI: 1.51-15.52, $P < 0.003$). The odds of having a depressive illness increased with increasing duration of having HIV/AIDS. Using less than 12 months as reference, cases with 13-36 months with the disease were slightly more likely (OR: 1.09) to be depressed, whereas those who had the disease for more than 36 months were nearly eight times more likely (OR: 7.90). This difference was statistically significant ($P < 0.0001$). PLWHAs in stage 3-4 of the disease were significantly more likely to have depression compared with those in stages 1 and 2 (OR: 9.21, 95% CI: 3.86-22.23, $P < 0.0001$).

Cases whose partners were also sero-positive were twice as likely to have depression compared with those who did not know their partners status or whose partners were sero-negative (OR: 2.09, 95% CI: 0.96-4.54, $P < 0.04$). PLWHAs and had a co-morbidity were seven times more likely to have a depressive illness (OR: 7.09, 95% CI: 3.28-18.84, $P < 0.0001$) compared with those without a co-morbidity.

Depression symptom severity as measured by the BDI showed that the mean score (SD) for the cases was 9.32 (8.66),

Table 3: Illness characteristics of cases

Variables	Cases *N* (%)
Type of HIV infection	
1	143 (95.3)
2	3 (2.0)
1 and 2	4 (2.7)
Stage of infection	
1	63 (42.0)
2	37 (24.7)
3	43 (28.7)
4	7 (4.6)
Duration of diagnosis (months)	
0-12	51 (34.0)
13-36	78 (52.0)
>36	21 (14.0)
Partners HIV status	
Positive	66 (44.0)
Negative	32 (21.3)
Not known	52 (34.7)
Other physical co-morbidity	
Positive	66 (44.0)
Negative	32 (21.3)
Unknown	52 (34.7)

which was significantly higher than that 5.53 (5.47) of the comparison group ($t = 4.537$, df =298, $P < 0.001$). Using the BDI, 48 (32%) of the cases were depressed compared with 11 (7.3%) in the comparison group.

Discussion

This study replicates previous findings concerning the prevalence of depression among PLWHAs in Nigeria in particular.[14,15] The prevalence obtained also falls within the rates seen internationally.[16] It can then be reiterated that depression is a common co-morbidity among PLWHAs in the country. This finding stresses the need for nonpsychiatric physicians to consider psychological maladjustments to the disease as important as it affects their quality of life.[14] The emphasis should go beyond achieving low viral loads to ensuring that factors which may impair treatment adherence are effectively handled. Depression is a modifiable risk factor for higher morbidity and mortality from HIV/AIDS and effective treatments are easily available and affordable in developing countries. Depression care would also reduce treatment costs and reduce the time spent from reduced clinic visits.[17]

We note the significant relationship between the female gender and an increased risk of depression in this study. Though the sample was disproportionately female, chance or bias could not explain the higher proportion of depression observed. Earlier reports have confirmed the higher likelihood for depression among females with the disease.[18] Depression on its own is more likely in females, we did not control the effect of gender in the design of this study. We also note that depression was higher among PLWHAs compared with apparently healthy staff of three local governments. We should note that we only obtained verbal confirmation of their HIV sero-negativity, and performed no objective tests. It is possible that staffs that are sero-positive may have declined indicating their status because they were interviewed at their places of work.

Being unemployed was also seen as a risk factor for depression among PLWHAs surveyed and replicates similar findings. Unemployment may correlate with poorer quality of life outcomes, which are related to poor psychological adjustment. We could not determine if the diagnosis of HIV/AIDS resulted in unemployment due to the study design. It has been reported that discrimination by employers has resulted in affected individuals declining to indicate their status, which affects the effectiveness and attention they pay to receiving optimal care.

Having at least one child and living with others were protective against depression among PLWHAs in this study. Though it is fast eroding, the extended family system appears to play a supportive role in this environment. It may be that both factors reduce hopelessness and helplessness, which are two key constructs in the diagnosis of depression. Family members provide support and affiliation, which reduces stigma and reduces the risk of psychological maladjustment.

We also observed that the odds of having depression increased with higher stages of the disease. It has been postulated that higher stages of the disease correlate with lower immune status, which has been reported to be a hypothetical factor in the development of depression.[5]

In the light of our current findings and against the backdrop of an increased burden of healthcare costs among PLWHAs and co-morbid depression, we suggest that mental health promotion be targeted at this group. Clinicians should be aware of identified risk factors for depression in particular and other mental illnesses in general and provide pro mental health awareness targeted not just at the patients but also the caregivers. Clinicians may do this by identifying patient skills and also teaching skills that would be beneficial in improving mental health. At the community level, socioeconomic and living conditions for PLWHAs should be focused upon. Skills such as spirituality, social skills, and resilience training have been reported to be beneficial in mental health promotion.[19]

This study has some limitations. We recruited our cases from among persons attending the HIV clinic. This sample may not be truly representative of the population of PLWHAs in the city, as they are more likely to be health conscious and attend clinic regularly. As stated earlier

the lack of an objective assessment of HIV status among persons in the comparison group limited the effective interpretation as a control group. Lastly, interviewing the apparently healthy group at their place of work may have biased their responses.

Conclusion

Depression is common among PLWHAs attending a HIV Clinic in southern Nigeria. Gender, economic status, disease severity increased the odds of having the co-morbidity, whereas having at least one child and not living alone reduced this risk. Clinicians should screen routinely for depression in their patients to reduce mortality and improve outcomes.

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