

Psycho-Social and Medical Variables of Depression in HIV/AIDS Patients in Kano, Nigeria

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Abstract: *Background:* Depression in HIV/AIDS patients often go unrecognised in the clinic, and are not treated or referred, resulting in psychological morbidity which possibly affects compliance, and may breed drug resistance. Depression may be a complication of HIV/AIDS, and may in fact predispose an individual to HIV infection. In some cases, depression may be the presenting feature of HIV/AIDS especially in young adults.

Aim: The objective of the study was to identify the psycho-social and medical variables of depression in HIV/AIDS patients in Kano, Nigeria.

Methods: The study was cross-sectional, and was carried out at Aminu Kano Teaching Hospital (AKTH), Nigeria. The study included 250 HIV/AIDS patients admitted in AKTH. A socio-demographic questionnaire and the Hospital Anxiety and Depression (HAD) Scale questionnaire were administered to the patients. Respondents who scored 8 and above on the screening instrument (HAD) were further assessed by the depressive module of Composite International Diagnostic Inventory (CIDI) for depression.

Results: Two hundred and fifty subjects, aged 15 to 54 (mean= 32; s.d = 8), were recruited for the study, the majority (82%) of the patients were between 20 to 39 years. One hundred and thirty one (52.4%) were males. In univariate analysis, past history of psychiatric illness, perception of the illness, feelings of stigma, job problems, sexual problems, and educational problems were found to be associated with depression. In multivariate analysis, only sexual problem ($p=0.0045$) and patients' perception of illness ($p=0.0148$) were significant predictors of depression in the subjects.

Discussion: This study confirmed some of the important predictors of depression in HIV/AIDS patients with the most significant ones here being sexual problems and perception of illness of HIV/AIDS.

Keywords: Depression, HIV/AIDS, risk factors, predictors, factors associated.

INTRODUCTION

Depression is the most frequent neuropsychiatric manifestation of HIV/AIDS [1-4]. The relationship between the two conditions is multifactorial. Depressed people are more likely to engage in risky sexual behaviour which ultimately increases their risk of contracting HIV infection [5]. On the other hand, confirmation of HIV infection in a patient may trigger depressive symptoms [6].

Several psychosocial variables linking HIV/AIDS and depression have been mentioned in the literature. Of these variables, stigma, substance abuse, sexual dysfunction, lower educational status, past history of psychiatric illness and unemployment (lower socio-economic class) have been studied. A study by Gupta *et al.* found strong relationship between stigma and depression in HIV/AIDS patients [5]. They discovered that the odd for depression among HIV+ patients that experienced "anticipated stigma" to be more than twice that of those who did not experience stigma [5]. Lyketsos *et al.* in 1996, found that substance abuse was strongly associated with depression and asserted

that a history of substance abuse is the most powerful and consistent predictor of scoring above threshold on the screen of distress and depression [7]. According to W.H.O. report of 2008 on HIV/AIDS and Mental Health, non-injecting use of drugs of abuse is associated with transmission of HIV infection through high risk sexual behaviors [8]. The report noted that "effective and ethical prevention and treatment at the early stages of drug use and dependence can reduce the drug-related risks of HIV transmission". Similar findings have been reported by studies conducted in African countries [8].

Sexual dysfunction has also been reported to be common among HIV/AIDS patients. A study by Guaraldi and his colleagues found the prevalence of sexual dysfunction of 13%-74% among patients on HAART [9]. Trotta *et al.* stated that poor psychological and emotional functions may be the predisposing factor to this dysfunction in the cohort studied [10]. In a study of 278 HIV+ patients, Lari and his colleagues reported a relationship between sexual dysfunction and depression in these patients [11]. Armistread *et al.* found that women with social support and those who had disclosed their HIV status to their partners reported fewer symptoms of depression [12]. Lower educational status and unemployment have also been shown to be positively related to depression in HIV patients [5].

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Medical variables of depression in HIV/AIDS include CD4 count, stage of the disease and past history of psychiatric illness. CD4+ cell count was in fact found to be the main predictor of the affective dimension of illness behavior [13]. A longitudinal study of 177 multi-ethnic HIV+ men and women on HAART found that depression leads to a fall in CD4 count and a rise in viral load [14]. Depressed patients have been reported to have “worse physical, social and role functioning, worse perceived current health, and greater bodily pain than other patients” [7].

Since the commencement of the use of HAART for the therapy of HIV/AIDS, the disease seems to have been brought under control. Alciati *et al.* found the lowest prevalence of depression of 4.4% in their respondents who were all on antiretroviral treatment [15]. The immunological reconstitution and clinical improvement associated with the therapy presumably accounted for this low prevalence rate. However, other studies did not find significant differences in CD4 count between depressed and non-depressed HIV+ patients [1, 16-18].

As should be expected, people living with HIV (PLWH) that know their status for long are likely to have more frequent depressive symptoms [19]. Lyketsos *et al.*, in a hospital based study, found that patients in the AIDS stage were more likely to be depressed [7]. In another related study, they examined the changes in depressive symptoms as AIDS develops and found that depressive symptoms were stable overtime from month 60 to month 180 before AIDS developed. However, beginning 12-18 months before AIDS diagnosis, there was significant rise in all measures of depression, which reached a plateau within 6 months before the onset of AIDS. They concluded that, there is dramatic, sustained rise in depressive symptoms as AIDS develops, beginning as early as 18 months before clinical diagnosis of AIDS, with prior depression, HIV-disease-related factors and psychological stressors contributing to this rise [7]. In the same vein, HIV+ persons that are medically symptomatic appear to be more predisposed to depression compared to those who are asymptomatic [20, 21]. Similarly, presence of comorbid conditions increases the rate of depression in HIV patients. Musisi *et al.* found major depression in HIV/AIDS patients to be significantly associated with having tuberculosis [22]. However, Song *et al.* found there was no statistically significant relationship between opportunistic infections and depression in HIV/AIDS patients [1].

The aim of this study was to identify the psychosocial and medical variables of depression in HIV/AIDS patients in Kano, Nigeria.

This study was aimed at identifying the psychosocial and medical variables of depression in HIV/ AIDS patients. This will allow for comparison with available data elsewhere, and as more studies are conducted in Nigeria, emerging trends will evolve.

METHODOLOGY

The Study Area

The study was conducted in AKTH, a tertiary institution in North-western Nigeria. The hospital provides specialist and general curative medical services to patients from Kano metropolis and the various Local Government Areas surrounding it. Patients from neighbouring states patronise the services of the hospital occasionally. Patients utilizing the hospital services are of diverse ethnic groups and backgrounds; however, most of them are Hausas. Kano state occupies a central position in the northern part of the Federal Republic of Nigeria [23].

Inclusion Criteria

The study population included all HIV/AIDS patients attending the HIV/AIDS clinic which was run weekly in the Hospital. The clinic is considered the adult HIV/AIDS clinic, and attends to all HIV/AIDS patients 15 years and above.

Exclusion Criteria

- Paediatric HIV/AIDS patients, psychotic patients who might not be able to answer questionnaires
- Those who were mute/unconscious, and
- Those who were too ill and could not respond to questions,
- Those who declined to be involved in the study

Sampling Method

Systematic sampling technique (n^{th} sampling) was employed in the selection of study subjects.

Study Design

This was a cross-sectional study and was carried out over a period of six months.

Measures or Instruments

Three instruments, a sociodemographic questionnaire, Hospital Anxiety and Depression Rating scale and Composite International Depression Inventory were utilized.

A) a pre-tested, well structured socio demographic questionnaire was designed to obtain information on sociodemographic, psychosocial and medical variables of the respondents.

B) Hospital Anxiety and Depression (HAD) Scale

HAD [24] is a portable easy to administer measure of the present anxiety or depressive state of the patient. The instrument has been validated for use in Nigeria [25]. The author reported the sensitivity of the anxiety scale to range from 85.0% in medical ward and surgical ward to 92.9% in antenatal clinic, while sensitivity for depression sub-scale ranged from 98.5% in the community sample to 92.1% in the gynaecology clinic. Specificity for the anxiety sub-scale ranged from 86.5% in gynaecology clinic to 90.6% in community sample while specificity for the depressive sub-scale ranged from 86.6% in the medical ward and surgical ward to 91.1%. It consists of seven depression items and seven anxiety items [25]. For the purpose of this study, the depression item of the instrument was used. HAD has a minimum score of 0 and a maximum score of 21. 0-7 (non-cases), 8-10 (Doubtful cases), 11-21 (Cases).

C) The Composite International Diagnostic Interview (CIDI)

The CIDI is a fully standardized diagnostic interview schedule designed for assessing mental disorders based on the definitions and criteria of ICD and DSM [26]. No significant numbers of diagnostic discordances were found with lifetime, six-month, and four-week time frames [26]. The CIDI has been validated and used in Nigeria [27, 28]. The depressive module of CIDI was used in this study.

Preparation for Data Collection

Considering the low literacy level of the people in the study area, both the Hospital Anxiety and Depression Scale (HAD) and Composite International Diagnostic Interview (CIDI) were translated into Hausa language using back-iterative translation (meaning that the instrument was translated into Hausa by an expert

in translation and another expert translated the Hausa version back into English and the meaning remained the same) taking cognisance of the semantic and linguistic differences.

Based on the Agreement Method [29], an estimation of inter-rater reliability was calculated. A concurrence (i.e. inter-rater reliability) of 75% was obtained and was considered acceptable.

Procedure

Prior to the commencement of the study, clearance was obtained from the Ethical Committee of AKTH, permission was also obtained from the Head of Internal Medicine of the hospital, and the consultant in charge of the HIV/AIDS clinic. Informed consent was also obtained from each patient who agreed to participate in the study at the point of first contact.

Two hundred and fifty subjects were selected by systematic sampling from the patients attending the HIV/AIDS clinics. A sociodemographic questionnaire and the depression items of Hospital Anxiety and Depression (HAD) Scale questionnaire were administered to the patients. Respondents who scored 8 and above on the screening instrument (HAD) were further assessed for depression using by depression module of CIDI.

Statistical Analysis

The data was analyzed using the Statistical Package for Social Sciences Version 17.0 (SPSS 17.0). A statistical test of significance (X²) was used to determine significant associations between variables.

RESULTS

A total of 250 subjects were randomly selected for this study. Their age ranged between 15-54 years with a mean of 32years and standard deviation of 8years. Of these, majority (52.4%) were males, more than half (54%) were married; and less than half (40.8%) were unskilled (Table 1). Few respondents, 9 (3.6%) had a past history of psychiatric illness while 39 (5.6%) had a family history of same; and 30% lacked social support. Most 208(83.6%) were hopeful of a good response to treatment, 16% (40) of the respondent felt that death was inevitable and near, 68 (68.4%) had guilt, sorrow and regrets about their HIV status. Of all the respondents, 50(20.0%), 34(13.6%), 61(24.4%) and 74(29.6%) had problems with education, partners, opposite sex and job respectively. Most 182(72.8%)

Table 1: Sociodemographic Characteristics of the Study Subjects

Variable	Depressed No. (%)	Non depressed No. (%)	Total No. (%)	χ^2	p-value
	N=250				
Age group in years					
15-19	1(25.0)	3(75.0)	4(1.6)	-	-
20-24	15(53.6)	13(46.4)	28(11.2)		
25-29	21(32.8)	43(67.2)	64(25.6)		
30-34	19(27.1)	51(72.9)	70(28.0)		
35-39	15(33.3)	30(66.7)	45(18.0)		
40-45	6(26.1)	17(73.9)	23(9.2)		
46-49	6(75.0)	2(25.0)	8(3.2)		
50-54	4(50.0)	4(50.0)	8(3.2)		
Sex					
Female	43(36.1)	76(63.9)	119(47.6)	0.18	0.67
Male	44(33.6)	87(66.4)	131(52.4)		
Occupation					
Skilled/Social class I	2(40)	3(60)	5(2.0)	4.46	0.35
Intermediate/Social class II	18(48.6)	19(51.4)	37(14.8)		
Semi skilled/Social class III	24(28.9)	59(71.1)	83(33.2)		
Unskilled/Social class IV	35(34.3)	67(65.7)	102(40.8)		
Unemployed/Social class V	8(34.8)	5(65.2)	23(9.2)		
Education					
Primary	25(40.3)	37(59.7)	62(24.8)	4.64	0.46
Secondary	33(32.7)	68(67.3)	101(40.4)		
Tertiary	21(38.9)	33(61.1)	54(21.6)		
Islamic	8(24.2)	25(75.8)	33(13.2)		
Marital Status					
Single	20(38.5)	32(61.5)	50(20.8)	1.99	0.74
Married	44(32.6)	91(67.4)	135(54.0)		
Widowed	19(40.4)	28(59.6)	47(18.8)		
Separated	2(22.2)	7(77.8)	9(3.6)		
Divorced	2(28.6)	5(71.4)	7(2.8)		

believed they had not infected others, while 71 (28.4%) suffered stigma as a result of HIV/AIDS diagnosis. Nearly 70% admitted that their partners were aware of their HIV/AIDS status, and all the respondents received counselling for their condition. Most 174(69.6%) received some form of support from friends, relatives or colleagues (Table 2). Majority of the subjects were in clinical stage 3 of HIV/AIDS infection both at the point of diagnosis 109(43.6%) and at the time of the study 118(47.2%). The CD4 counts of most respondents at

the point of diagnosis and at the time of study were within the range 200-399. The CD4 count of 23(9.2%) respondents could not be ascertained at the time of this study as an interval of 2-3 months is usually given before another count is done, after the initial one at diagnosis/before commencing treatment. About one-third, 82(32.8 %), were asymptomatic, with the commonest morbidity being tuberculosis 69(27.6%). Tuberculosis, diarrhoea and Candidiasis constituted 140 (56%) of the medical co morbidities. About half of

Table 2: Psychological Variables of Study Subjects (N=250)

Variables	Depressed freq (%)	Non-depressed freq (%)	Total	χ^2	p-value
<i>Past History of Psychiatric illness</i>					
Yes	6(66.7)	3(33.3)	9(3.6)	4.18	0.04
No	81(33.6)	160(66.4)	241(96.4)		
<i>Family History of Psychiatric illness</i>					
Yes	18(46.2)	21(53.8)	39(15.6)	2.63	0.11
No	69(32.7)	142(67.3)	211(84.4)		
<i>Perception of illness</i>					
Death inevitable and near	29(72.5)	11(27.5)	40(16.0)	28.8	0.00
Hopeful of good response to treatment	58(27.6)	152(72.4)	210(84.0)		
<i>Problem with education</i>					
Yes	27(54.0)	23(46)	50(20)	10.2	0.019
No	60(30.0)	140(70.0)	200(80)		
<i>Problem with partner</i>					
Yes	8(34.8)	15(65.2)	34(13.6)	0.06	0.80
No	44(32.1)	93(67.9)	216(86.4)		
<i>Problem with Job</i>					
Yes	40(54.1)	34(45.9)	74(29.6)	17.2	0.02
No	47(26.7)	129(73.3)	176(70.4)		
<i>Do you feel guilt/Regret/Sorrow about HIV?</i>					
Yes	64(37.4)	107(62.6)	171(68.4)	1.76	0.253
No	23(29.1)	56(70.9)	79(31.6)		
<i>Do you feel you have infected others?</i>					
Yes	33(48.5)	35(51.5)	68(27.2)	7.76	0.07
No	54(29.7)	128(70.3)	182(72.8)		
<i>Was any form of counseling done?</i>					
Yes	87(34.8)	163(65.2)	250(100)	-	-
No	0(0.00)	0(0.00)	0(0.00)		
<i>Counseling type</i>					
Pre-test counseling only	5(45.5)	6(54.5)	11(4.4)	6.72	0.08
Post-test counseling only	29(44.6)	36(55.4)	65(26.0)		
Both	53(30.5)	121(69.5)	174(69.6)		
<i>Have you suffered stigma or discrimination?</i>					
Yes	39(54.9)	32(45.1)	71(28.4)	17.8	0.00
No	48(26.8)	131(73.2)	179(71.6)		
<i>Support from your friends/Relatives Or colleagues?</i>					
Yes	39(22.5)	134(77.5)	174(69.6)	37.2	0.00
No	48(62.3)	29(37.7)	76(30.4)		
<i>Partner awareness of diagnosis</i>					
Yes	57(33.1)	115(66.9)	72(68.8)	0.67	0.41
No	30(38.5)	48(61.5)	78(31.2)		
<i>Problem with opposite sex</i>					
Yes	34(58.6)	24(41.4)	58(25.8)	18.4	0.00
No	45(27.3)	120(72.7)	167(74.2)		

Table 3: Medical Characteristics of the Subjects in the Study

Variable	Depressed freq (%)	Non depressed freq (%)	Total	χ^2	p
N=250					
<i>Clinical stage at diagnosis</i>					
Stage I	1(6.2)	15(93.8)	16(6.4)	16.0	0.100
Stage II	18(31.0)	40(69.0)	58(23.2)		
Stage III	33(30.3)	76(69.7)	109(43.6)		
Stage IV	35(52.2)	32(47.8)	67(26.8)		
<i>Clinical stage at time of study</i>					
Stage I	1(7.1)	13(92.9)	14(5.6)	7.8373	0.0595
Stage II	26(40.0)	39(60.0)	65(26.0)		
Stage III	37(31.4)	81(68.6)	118(47.2)		
Stage IV	23(43.4)	30(56.6)	53(21.2)		
<i>Medical condition present</i>					
Candidiasis	22(62.9)	13(37.1)	35(14.0)	6.6752	0.0562
Pneumonia	3(18.8)	13(81.2)	16(6.4)		
Diarrhoea	9(25.0)	27(75.0)	36(14.4)		
Tuberculosis	30(43.5)	39(56.5)	69(27.6)		
Others	3(25.0)	9(75.0)	12(4.8)		
None	20(24.4)	62(75.6)	82(32.8)		
<i>Current medication</i>					
Antiretrovirals	54(41.9)	75(58.1)	129(51.6)	5.456	0.0654
Anti-TB	18(47.4)	20(52.6)	38(15.2)		
Combinations	1(20.0)	4(80.0)	5(2.0)		
Antibiotics	0(0.00)	7(100)	7(2.8)		
Antifungals	2(13.3)	13(86.7)	15(6.0)		
Multivitamins	5(55.6)	4(44.4)	9(3.6)		
None	10(21.3)	37(78.7)	47(18.8)		
<i>Med problem</i>					
Yes	30(42.3)	41(57.7)	71(79.8)	5.73	0.06
No	8(57.1)	6(42.9)	14(20.2)		

TB = Tuberculosis.

the patients, 129 (51.6%), were on antiretroviral medications, and 38 (15.2 %) and 15 (6.0 %) were on anti-tuberculous and anti fungal medications respectively. Of the study subjects, 47(18.8%) were not taking any medication at the time of the study. These patients not currently on any medication were those still undergoing laboratory assessment or those with optimal CD4 counts and clinically stable conditions ("positive living" patients) (Table 3). In univariate analysis, past history of psychiatric illness, perception of the illness, feelings of stigma, job problems, sexual problems, and educational problems were found to be associated with depression. In multivariate analysis,

only problem with the opposite sex and patients' perception of illness were significant predictors of depression (Table 4).

DISCUSSION

Depression is an important accompaniment of HIV infection. The importance of identifying and treating co-morbid psychiatric disorders in persons living with HIV/AIDS has been recognized since the disease syndrome was first identified [30]. Identification and treatment of depression in HIV/AIDS patients has individual and community implication, in that it affects morbidity and compliance to treatment [31].

Table 4: Multivariate Logistic Regressions for Determinants of Depression in the Patients with HIV/AIDS

Term	Odds Ratio	95%	C.I.	Coefficient	S. E.	P-Value
Comorbidity	1.1038	0.7205	1.6910	0.0988	0.2176	0.6500
Drugs	2.7251	0.6593	11.2643	1.0025	0.7241	0.1662
Duration of Diagnosis	0.9886	0.9446	1.0347	-0.0114	0.0232	0.6225
Education Problem	0.9683	0.1980	4.7351	-0.0322	0.8098	0.9683
Family History of Psychiatry Illness	0.9413	0.1610	5.5031	-0.0605	0.9009	0.9465
Job Problems	1.3069	0.2602	6.5641	0.2676	0.8235	0.7452
Medical Problems	0.4271	0.1082	1.6865	-0.8507	0.7007	0.2247
Perception of HIV/AIDS illness	<u>25.8346</u>	<u>1.8894</u>	<u>353.2518</u>	3.2517	1.3344	<u>0.0148</u>
Past Psychiatry history	1.0077	0.0328	30.9666	0.0077	1.7476	0.9965
Sexual problems	<u>8.8348</u>	<u>1.9655</u>	<u>39.7123</u>	2.1787	0.7668	<u>0.0045</u>
Stigma	1.3580	0.2736	6.7397	0.3060	0.8173	0.7081
CONSTANT	*	*	*	-12.9645	5.0133	<u>0.0097</u>

In this study, I found that more patients with depression had a past history of psychiatric illness compared to those without depression ($p=0.04$). This is consistent with the study by Gaynes *et al.* in 2012, where the authors reported that prior history of depression was the strongest risk factor for depression within the past year [20]. Family history of psychiatric illness did not significantly differ among the depressed and non-depressed subjects studied ($p=0.11$). This is un-expected, considering that a family history of depression predisposes one to depression. However, this could be explained by possible concealment of such positive history, because in many community settings, family history of mental illness confers marital and relationship disadvantages.

Patients with negative perception of the illness ($p=0.00$) and perceived stigma ($p=0.00$) were more likely to be depressed than their counterparts without similar perceptions. This confirms the study by Gupta *et al.*, where the authors discovered that HIV patients who described their health status to be poor were more likely to be depressed compared to those who considered themselves in good health conditions [5]. In the same study, they discovered that patients who experienced stigma were more than twice likely to be depressed compared to those who did not experience stigma [5]. Pappin and his colleagues have also shown that there was positive relationship between feeling of stigma and depression in HIV/AIDS patients [19]. Therefore, it is important for caregivers of HIV patients to regularly counsel them about their conditions and give them hope that although the disease is not yet curable, adherence to treatment can improve their general conditions. In addition, strategies aimed at reducing HIV stigma should be included in the

comprehensive program of HIV prevention and care [5].

In this study, no relationship was found between guilt feeling and depression ($p=0.253$). It might be expected that patients with guilt feelings are more likely to be depressed about their being in avoidable situation. The possible explanation for the absence of this finding might be that patients with no guilt feelings (31.6%) were more likely to be innocent victims/spouses who have not engaged in regrettable behaviors, and might be at great torment over their seemingly undeserved fate, thus balancing the probabilities.

No association could be established in this study between depression among HIV/AIDS patients and drug abuse ($p=0.12$). This contrasts with the study by Lyketsos and his colleagues who found strong relationship between substance abuse and depression in HIV/AIDS patients [7]. This can be explained by the fact that in this study, most (63.49%) of the 63 respondents who admitted to drug abuse only do so "occasionally" (interpreted to mean "less frequent than monthly"). Moreover, it has been shown that it's the HIV patients with current substance use disorder that are predisposed to depression and not just those currently abusing substances [16].

We noticed that social support was poor among the depressed persons in this study compared to non-depressed cohorts. Statistical analysis showed there was a significant relationship between social support and depression in HIV patients ($p=0.00$). This is in agreement with previous studies which demonstrated that social support reduces the risk of depression in HIV patients [3, 12, 18, 21]. Therefore, it is important

for friends and relatives of HIV patients to give them moral and emotional supports as these will go a long way in reducing the risk of depression in these patients.

In this study, patients with job problems were more likely to be depressed than those without such problems ($p=0.00$). Job problem can directly translate into financial difficulties and constrained means. This, in a patient with hitherto stable socio-economic situation, can be a stressor.

The awareness of diagnosis by partners was not significantly different between depressed and non-depressed HIV patients ($p=0.41$). This is in contrast with the findings of Armistread *et al.* which reported that women who have disclosed their HIV status to their partners had fewer symptoms of depression [12]. However, their study was restricted to female patients.

There were more sexual problems in HIV/AIDS patients with depression compared to those without depression ($p=0.00$). This is in agreement with the finding by Guaraldi *et al.*, which demonstrated high prevalence of sexual dysfunction (13-74%) among HIV patients [9]. Similar finding was made in a study by Lari and his colleagues [11]. Depression can result in vegetative dysfunction relating to sex (i.e. depression being the cause of sexual problem); or HIV can lead to rejection by partner, or the patient's fear of infecting his partner may result in sexual problem. In addition, poor psychosocial and emotional functions may be the pre-disposing factors for depression in these patients [10].

Our study found positive relationship between educational problems and depression ($p=0.019$). This might be attributable to the cognitive impairment by depression, which affects memory, intellect and judgment, hence leading to difficulty in learning. This is in line with a study by Gupta *et al.* which demonstrated that HIV/AIDS patients with lower educational status are more likely to be depressed compared to those with good educational background [5].

This study did not find relationship between the presence of opportunistic infections and depression in HIV patients. This is in consonance with the meta-analysis of data obtained from Sub-Saharan Africa by Habib and his colleagues [17]. Similar finding was made elsewhere [1]. However, other studies reported positive relationship between opportunistic infections and depression [22]. This may be explained by the fact that majority of our study subjects were already on medications for those opportunistic infections.

The multivariate logistic regression among the discrete variables revealed that sexual problem with

the opposite sex ($p=0.0045$) and patients' perception of illness ($p=0.0148$) were the significant predictors of depression in the subjects. Sexual problem with opposite sex as a significant predictor of depression is not surprising, because most of the study subjects were in their physiological and reproductive primes, when sexual activities have significant weight on individuals' feelings of self-worth and wellbeing. Perception of HIV in this study was taken to mean "disease intolerable, life worth living with HIV, and antiretrovirals helpful" or "life is worthless with HIV and death inevitable". Clearly, patients with former perception are likely to be less depressed.

Some of the respondents with depression may have psychotic features which might make their response unequivocal, or necessitate the input of their relatives.

CONCLUSION

Clinicians attending to HIV/AIDS patients should be vigilant to detect depression in the patients, guided by clinical features and risk factors including medical and psychosocial factors. This is with a view to refer them to psychiatrist for management using a biopsychosocial framework that includes psychopharmacological and psychotherapeutic intervention to reduce morbidity and mortality in affected patients.

CONFLICT OF INTEREST

The author reported no conflict of interest in this study.

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REFERENCES

- [1] Song JY, Lee JS, Seo YB, *et al.* Depression among HIV-infected patients in Korea: assessment of clinical significance and risk factors. *Infect Chemother* 2013; 45: 211-6. <http://dx.doi.org/10.3947/ic.2013.45.2.211>
- [2] Berhe H, Bayray A. Prevalence of depression and associated factors among people living with HIV/AIDS in Tigray, North Ethiopia: a cross sectional hospital based study. *IJPSR* 2013; 4: 765-75.
- [3] Su X, Lau JT, Mak WW, *et al.* Prevalence and associated factors of depression among people living with HIV in two cities in China. *J Affect Disord* 2013; 149: 108-15. <http://dx.doi.org/10.1016/j.jad.2013.01.011>

- [4] Elliot A. Depression and HIV in the era of HAART, *STEP Perspective* 2003; 2: 4-10.
- [5] Gupta R, Dandu M, Packel L, *et al.* Depression and HIV in Botswana: A population-based study on gender-specific socio-economic and behavioral correlates. *PLoS One* 2010; 5: e14252.
<http://dx.doi.org/10.1371/journal.pone.0014252>
- [6] Boarts JM, Buckley-Fischer BA, Armelie AP, Bogart LM, Delahanty DL. The impact of HIV diagnosis-related vs. non-diagnosis related trauma on PTSD, depression, medication adherence, and HIV disease markers. *J Evid Based Soc Work* 2009; 6: 4-16.
<http://dx.doi.org/10.1080/15433710802633247>
- [7] Lyketsos CG, Hutton H, Fishman M, Schwartz J, Tresiman GJ. Psychiatric morbidity on entry to an HIV – primary care clinic. *AIDS* 1996; 10:1033-9.
<http://dx.doi.org/10.1097/00002030-199610090-00015>
- [8] HIV/AIDS and mental health, report by the Secretariat, World Health Organization, EB124/6 20th November, 2008.
- [9] Guaraldi G, Luzi K, Murri R, *et al.* Sexual dysfunction in HIV-infected men: role of antiretroviral therapy, hypogonadism and lipodystrophy. *Antivir Ther* 2007; 12: 1059-65.
- [10] Trotta MP, Ammassari A, Murri R, Monforte AD, Antinori A. Sexual dysfunction in HIV infection. *Lancet* 2007; 369: 905-6.
[http://dx.doi.org/10.1016/S0140-6736\(07\)60446-2](http://dx.doi.org/10.1016/S0140-6736(07)60446-2)
- [11] Amini Lari M, Faramarzi H, Shams M, Marzban M, Joulaei H. Sexual dysfunction, depression and quality of life in patients with HIV infection. *Iran J Psychiatry Behav Sci Behav Sci* 2013; 7: 70-7
- [12] Armistead L, Morse E, Forehand R, Morse P, Clark L. African-American women and self-disclosure of HIV infection: rates, predictors, and relationship to depressive symptomatology. *AIDS Behav* 1999; 3: 195-204.
<http://dx.doi.org/10.1023/A:1025400410099>
- [13] Grassi L, Righi R, Makoui S. Illness behavior, emotional stress and psychosocial factors among asymptomatic HIV-infected patients. *Psychother Psychosom* 1999; 68: 31-8.
<http://dx.doi.org/10.1159/000012308>
- [14] Ironson G, O'Cleirigh C, Fletcher MA, *et al.* Psychosocial factors predict CD4 and viral load change in men and women with human immunodeficiency virus in the era of highly active antiretroviral treatment. *Psychosom Med* 2005; 67: 1013-21.
<http://dx.doi.org/10.1097/01.psy.0000188569.58998.c8>
- [15] Aciati A, Starace F, Scaramelli B, *et al.* Has there been a decrease in the prevalence of mood disorders in HIV-seropositive individuals since the introduction of combination therapy? *Eur Psychiatry* 2001; 16: 491-6.
[http://dx.doi.org/10.1016/S0924-9338\(01\)00611-3](http://dx.doi.org/10.1016/S0924-9338(01)00611-3)
- [16] Nakimuli-Mpungu E, Mojtabai R, Alexandre PK, *et al.* Lifetime depressive disorders and adherence to anti-retroviral therapy in HIV-infected Ugandan adults: a case-control study. *J Affect Disord* 2013; 145: 221-6.
<http://dx.doi.org/10.1016/j.jad.2012.08.002>
- [17] Habib AG, Yakasai AM, Owolabi LF, *et al.* Neurocognitive impairment in HIV-1-infected adults in Sub-Saharan Africa: a systematic review and meta-analysis. *Int J Infect Dis* 2013; 17: e820-31.
<http://dx.doi.org/10.1016/j.ijid.2013.06.011>
- [18] Adewuya AO, Afolabi MO, Ola BA, Ogundele OA, Ajibare AO, Oladipo BF. Psychiatric disorders among the HIV-positive population in Nigeria: a control study. *J Psychosom Res* 2007; 63: 203-6.
<http://dx.doi.org/10.1016/j.jpsychores.2007.03.006>
- [19] Pappin M, Wouters E, Booyens FL. Anxiety and depression amongst patients enrolled in a public sector antiretroviral treatment programme in South Africa: a cross-sectional study. *BMC Public Health* 2012; 12: 244.
<http://dx.doi.org/10.1186/1471-2458-12-244>
- [20] Gaynes BN, Pence BW, Atashili J, *et al.* Prevalence and predictors of major depression in HIV-infected patients on antiretroviral therapy in Bamenda, a semi-urban center in Cameroon. *PLoS One* 2012; 7: e41699.
<http://dx.doi.org/10.1371/journal.pone.0041699>
- [21] Atkinson H, Heaton R, Patterson T, *et al.* Two-year prospective study of major depressive disorder in HIV+ men. *J Affect Disord* 2007; 108: 225-34.
<http://dx.doi.org/10.1016/j.jad.2007.10.017>
- [22] Musisi S, Zziwa J, Nakasujja N. The prevalence of mood disorders among HIV/AIDS patients admitted in Mulago Hospital. In: Tumwine, J.K. (Ed.), *Proceedings of the Third Annual Scientific conference, Makerere University, Faculty of Medicine: 29th–31st August 2007*; Kampala, p. 58.
- [23] www.kanoonline.com (Accessed March 12,2014)
- [24] Zingmond AS, Snaith RP. Hospital anxiety and depression scale. *Acta Psychiatr Scand* 1983; 68: 361-70.
<http://dx.doi.org/10.1111/j.1600-0447.1983.tb09716.x>
- [25] Abiodun OA. A validity study of the hospital anxiety and depression scale in general hospital units and a community sample in Nigeria. *Br J Psychiatry* 1994; 165: 669-72.
<http://dx.doi.org/10.1192/bjp.165.5.669>
- [26] Wittchen HU, Robins LN, Cottler LB, Sartorius N, Burke JD, Regier D. Cross-cultural feasibility, reliability and sources of variance of the Composite International Diagnostic Interview (CIDI). The Multicentre WHO/ADAMHA Field Trials. *Br J Psychiatry* 1991; 159: 645-53.
<http://dx.doi.org/10.1192/bjp.159.5.645>
- [27] Gureje O, Lasebikan VO, Ephraim-Oluwanuga O, Olley BO, Kola L. Community study of knowledge of and attitude to mental illness in Nigeria. *Br J Psychiatry* 2005; 186: 436-41.
<http://dx.doi.org/10.1192/bjp.186.5.436>
- [28] Gureje O, Lasebikan VO, Kola L, Makanjuola V. Lifetime and 12-month prevalence of mental disorders in the Nigerian Survey of Mental Health and Well-Being. *Br J Psychiatry* 2006; 188: 467-71.
<http://dx.doi.org/10.1192/bjp.188.5.465>
- [29] Hall JN. Inter-rater reliability of ward rating scale. *Br J Psychiatry* 1974; 125: 248-55.
<http://dx.doi.org/10.1192/bjp.125.3.248>
- [30] Farber EW, McDaniel JS. Assessment and psychotherapy practice implications of new combination anti-viral therapies for HIV disease. *Prof Psychol Res Pract* 1999; 30: 173-9.
<http://dx.doi.org/10.1037/0735-7028.30.2.173>
- [31] Turrina C, Fiorazzo A, Turano A, *et al.* Depressive disorders and personality variables in HIV positive and negative intravenous drug-users. *J Affect Disord* 2001; 65: 45-53.
[http://dx.doi.org/10.1016/S0165-0327\(00\)00269-X](http://dx.doi.org/10.1016/S0165-0327(00)00269-X)

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