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Prevalence of Depression among HIV/AIDS Patients in A Tertiary Hospital in Ondo State

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A B S T R A C T

Introduction: Depression is a major disorder seen among people living with HIV/AIDS with prevalence ranging from 0-47.8%. A strong relationship exists between Depression and high rate of morbidity and mortality among patients living with HIV/AIDS. It tend to affect compliance to treatment, social life as well as health-related quality of life. The aim of this study is to determine the prevalence and severity of depression among HIV/ AIDS patients

Methods: The research was conducted at the University of Medical Sciences Teaching Hospital, Akure Complex, Ondo state, Nigeria. Data were collected by the Zung self-rating Depression scale (SDS) questionnaire. Chi square test was used to check for association and p value of <0.05 was considered statistically significant.

Results: A total of 144 HIV positive patients were included in the study. Most of the participants in this study were female (75%), had attained secondary level education (50%), were married (63.9%), Christians (93.8%), were between the age range of 30-39 years (38.9%) and were skilled worker (35.4%). There was a significant association between depression and age (p=0.002), duration of diagnosis (p=0.027), being a hypertensive patient (p=0.03) and being diabetic (p=0.01). Variables like gender, marital status, education level, occupation status, monthly income, religion, HIV/AIDS stages, ART, other diseases did not exhibit any significant association with depression.

Conclusion: High prevalence rate of depression was seen among people in their early diagnosis living with HIV/AIDS. Rate of depression among HIV patient should be detected early to help improve adherence to treatment and quality of life.

Introduction

HIV/AIDS is a major problem affecting the world with greater burden on Africans due to her adverse socio-economic conditions posing a difficulty dealing with an absolutely incurable disease. According to reports by UNAIDS, 38.0 million people globally were living with HIV in 2019 and 690,000 people had died from AIDS-related illness worldwide [1]. NACA reported a prevalence rate of 1.4% (1.9 million) for people living with HIV in Nigeria and for Ondo state in particular, a prevalence rate of 1.1% (81,481) of people living with HIV was reported in 2019 [2]. Most people living with HIV/AIDS (PLHA) are in low and middle-income countries (LAMI) [3], with Sub-Saharan Africa having the highest number of HIV infections in the world [4]. Once a person is diagnosed with HIV, he or she has to make some life-changing decisions [5]. Firstly, they have to make a major decision about who to inform of their HIV-positive status. Secondly, they have to decide about taking treatment regularly. Finally, they have to make a decision on childbearing and sexual relations. Affected people may feel isolated especially when social support is scarce, may refuse treatment, then they may experience psychiatric illnesses such as anxiety and depression [6].

Depression is a common mental disorder that shows dented mood, less energy, insomnia, loss of interest or pleasure, low self-esteem and lack of proper concentration [7]. Depression has been reported as a major neuropsychiatric disorder in people living with HIV/AIDS (PLWHA) with prevalence ranging from 0-47.8% [8]. Approximately, over 350 million PLWHA are currently living with depression and it is the second leading cause of disability among them [9, 10]. Also anxiety is recognised to be more prevalent in people living with HIV/AIDS (PLWHA) compared to the general population [11]. Anxiety and Depression are associated with increased morbidity and mortality in PLWHA and greatly affects adherence to antiretroviral therapy (ART), Quality of life (QoL), and health-related QoL in particular [12]. A previous study showed that Countries like Nigeria had high incidence rates of depression in people living with HIV compared to HIV-negative controls which was due to various factors which include; Social stigma, Occupational disability, Isolation from social support, Long-term physical discomfort and illness, sexual dysfunction and neurobiological changes related to persistent central nervous system infections due to HIV [13].

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Majority of the population of PLWHA that suffer from depression have not been diagnosed due to similarity of its symptoms with HIV infection [14]. These symptoms include a number of inexhaustible medication related side effects which occur simultaneously such as fatigue; anaemia, digestive problems, gas and bloating, Diarrhoea, Lipodystrophy (body shape changes), high levels of Fats and sugars in the blood, skin problem like hair loss, Peripheral Neuropathy, mitochondrial toxicity, osteoporosis, osteonecrosis, sad feeling, loss of interest in formerly enjoyable activities, guilt and irritability [15].

It has been postulated that psychosocial factors such as stress and depression may have dangerous effect on the course of many chronic diseases such as cancer and cardiovascular diseases [16]. The relationship between depression and early, as well as late spread of disease in men and, between depression and mortality in women has been shown by a recent study [17]. According to the international Association of Providers of AIDS Care website [18], the rate of depression in people with HIV are as high as 60% and that woman with HIV are twice as likely as men to be depressed.

The World Health Organization predicted that by the year 2020, depression will be the leading cause of worldwide disability [19]. In its September 9, 2005, Morbidity and Mortality Weekly Report, the Centers for Disease Control and Prevention (CDC) acknowledged that the presence of depression in subjects with chronic illness adversely affect the management and outcome of chronic illnesses [20]. Thus CDC called for public agencies to "incorporate" mental health promotion into chronic disease prevention efforts. This is due to the fact that depression is debilitating, progressive, relentless and age's patient's prematurely [21]. It is the key predictors of poor adherence to HIV medication, [22] and has negatively impact on clinical outcomes, [23].

Asides the effect of mental illness on HIV infection, it has been reported that higher prevalence of HIV are seen among the mentally ill persons than in general population by seven folds [24]. Various factors which enhances the susceptibility of mentally ill individuals to infections with HIV includes higher prevalence of poverty, Homelessness, High risk sexual activity and abuse and Social isolation [25]. Poor outcome of HIV has been observed between the mentally ill subjects which are due to poor adherence to HAART, lower accessibility to HAART, and immunological changes associated with mental illness itself [26].

Statistics showed that Nigeria has the second largest HIV epidemic in the world, which is 3,200,000 (2,300,000 – 4,300,000), where 30% (19% - 42%) were accessing antiretroviral therapy (ART) and a total of 160 000 (110 000 – 230 000) AIDS – related deaths [27]. It is also disheartening that from these records many people living with HIV in Nigeria certainly have a high rate of depression. Indeed, depression has been shown to be associated with substances abuse, [28] and poor adherence to (Highly active antiretroviral therapy) HAART, [29]. Poor adherence to antiretroviral treatment regimens has serious consequences for HIV-infected patients, including failure to prevent viral replication and an increased risk of developing viral resistance. Moreover, it keeps people out of the workplace, reduces productivity at school and work, and has tremendous negative effects on the economy, [30]. People who suffer from depression are nearly 28 times more likely to miss work because of emotional disability, [31], and this have an adverse effect on the economy, especially a recovery economy like Nigeria. However, there is dearth of information on the impact of mental illness particularly depression on the course and outcome of HIV/AIDS, [32], and the fact that depression often changes with time, [33]. Hence, this research needs to determine the prevalence of depression and also to provide relevant information on the complex relationship between Depression and HIV/AIDs, together with its predictors among people living with HIV/AIDS in southwestern Nigeria.

Aim and Objectives of the study.

The research aims to determine the prevalence and severity of depression among HIV/ AIDS patients at the University of Medical Sciences Teaching Hospital, Akure Complex, Ondo State, Nigeria. The research will also look into its association with the socio – demographics and clinical variables of people living with HIV/ AIDS.

METHODOLOGY

Study Area

The research will be conducted at the University of Medical Sciences Teaching Hospital, Akure Complex, Ondo state, Nigeria. The teaching hospital is a big health care facility comprising of four former hospitals in Ondo town namely; Mother and Child Hospital, Trauma and Surgical Centre, Kidney Care center and the state specialist hospital in the ancient town. It also comprises of the State Specialist Hospital in Akure, the Millenium Eye center, Akure and Dental Hospital Akure. With respect to the 2017 report presented by the Chairman, Ondo state Agency for the Control of AIDS, no fewer than 81,871 people have been infected with HIV in Ondo State, and this health facility in the heart of Ondo State happens to be the mostly likely destination for diagnosis and treatment for HIV/ AIDS Patient.

Study Design

This will be a cross-sectional study of Patients with HIV/ AIDS in the Teaching hospital employing the aid of Zung self-rating Depression scale (SDS) [34] questionnaire and demographics information.

Study Population

The study population will consist of HIV/AIDS positive Patients ≥ 18 years who visits the medical establishment.

Inclusion Criteria

Subjects were eligible for enrolment if:

i. Confirmed HIV Patients more than 18 years of age

ii. Patients who had voluntarily given written informed consent to participate in the study.

iii. Patients who were able to communicate with the researcher using English or Yoruba languages.

iv. Patients who were enrolled for treatment at the clinic between 0month to >1year

Sampling Method

To obtain a sample which was representative of the target population, a systematic sampling of both males and females will be applied. From more than 500 patients who are attended to every month a sample of 200 patients will be used. Sampling frame of every 4th patient was calculated. From a group of ten first patients one patient was selected as the index patient, there after every fourth patient was selected for the interview. Patients were interviewed when awaiting their medications from the pharmacy. The questionnaires were administered by the principal investigator and two trained research assistants.

Sample Size Determination

The minimum sample size was determined using the formula [35].

$$N= [Z^2 \alpha /^2 * P (1 – P)]/ \delta^2$$

Where:

N = Minimum sample Size required

$Z^2 \alpha /^2$ = Confidence interval (1.96 the value corresponding to 95% confidence interval).

P = the proportion of the target population estimated to be satisfied (15%). Given that there are no studies that have more than 15% as the estimated population.

δ^2 = absolute Precision

1 – P = Proportion of Population not satisfied.

Thus,

$N = [(1.96)^2 * 0.15 (0.85)]/ 0.05^2 = 0.489804/ 0.0025$

= 195.9, = 196

Sample size = 196 (the minimum sample size)

Method of Data Analysis

The data collected was analyzed using SPSS version 25 both descriptive and inferential statistics were used to analyze the data collected from the field. Frequency tables, percentages, mean and standard deviation were used for the descriptive data while, Chi – Square, ANOVA and correlation analysis would be used for the inferential statistics.

RESULTS

Demographic information

A total of One hundred and forty-four (144) patients were included in the study. The demographic information of the respondents are shown in Table 1. Most study participants were female (75%), had attained secondary level education (50%), were married (63.9%), Christians (93.8%) and were between the age range of 30-39 years (38.9%). Earnings of the most of the respondents (72.9%) were below 20,000 naira. Most of the respondents were asymptomatic (91.7%), currently on ART medication (95.8%). Only 9.7% of the respondents were Hypertensive, 2.8% are Diabetic and 2.1% are diagnosed with other illness.

Measurement of Depression Prevalence

Depression prevalence in the studied PLHAs are shown in Table 2. Majority of respondents feel best in the morning (41.7%), eat as much as they do (44.4%), have a clear mind (35.4%), finds things easy as they used to do (45.8%), and finds it easy to make decision (43.1%). More than half of the respondents reported a high level of hope about the future, enjoys the things they use to do, pretty full lifestyle, feels they are useful and needed (63.2%, 56.3%, 67.4%, 67.4% respectively).

Most of the respondents on rare occasions feel down-hearted and blue (47.9%), have crying spells (61.8%), experience trouble sleeping at night (57.6%), enjoy sex (48.6%), experience weight loss (63.2%), trouble with constipation (78.5%), gets tired for no reason (61.8%), are restless and can't keep still (67.4%), are more irritable than usual (66.7%), feel others would be better off if they were dead (72.2%)

Level of Depression in People living with HIV/AIDS

Level of depression in people living with HIV/AIDS are shown in Table 3. In our study, 44 respondents of the total population living with HIV/AIDS were depressed. Of these, 16.7%, 10.4% and 3.5% were mildly, moderately and severely depressed respectively. Also, 69.4% of the people living with HIV/AIDS were not depressed.

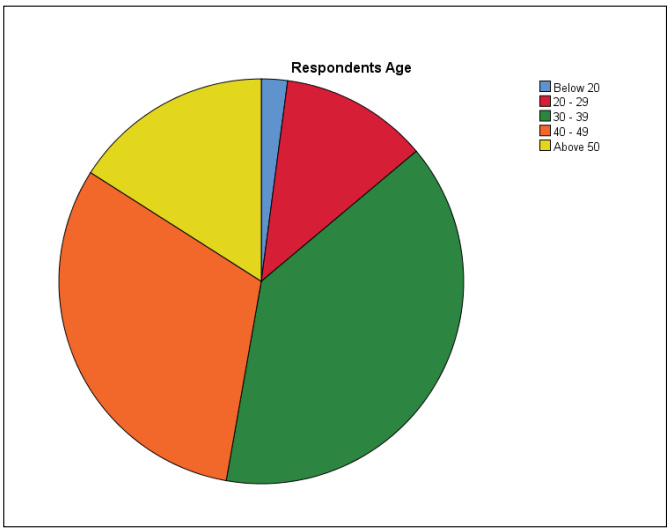
Association of Depression with Demographic and Clinical variables

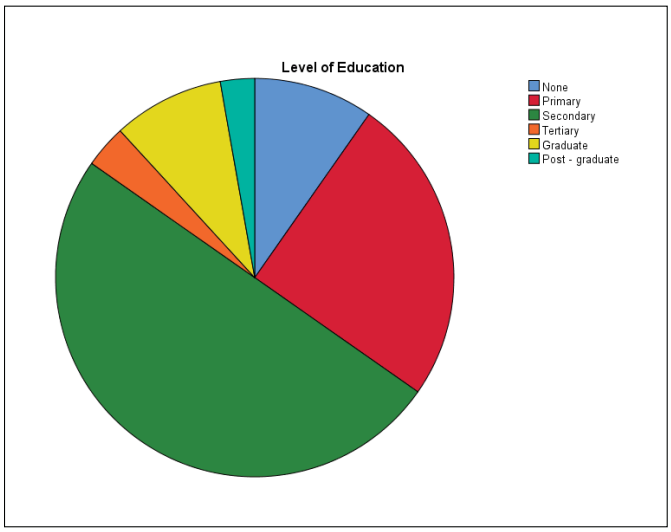
When investigated for depression and its association with demographic and clinical variables (Table 4), significant association of depression was detected in age (p=0.002), duration of diagnosis (p=0.027), hypertensive patient (p=0.03), diabetics (p=0.01). Variables like gender, marital status, education level, occupation status, monthly income, religion, HIV/AIDS stages, ART, other diseases did not exhibit any association with depression.

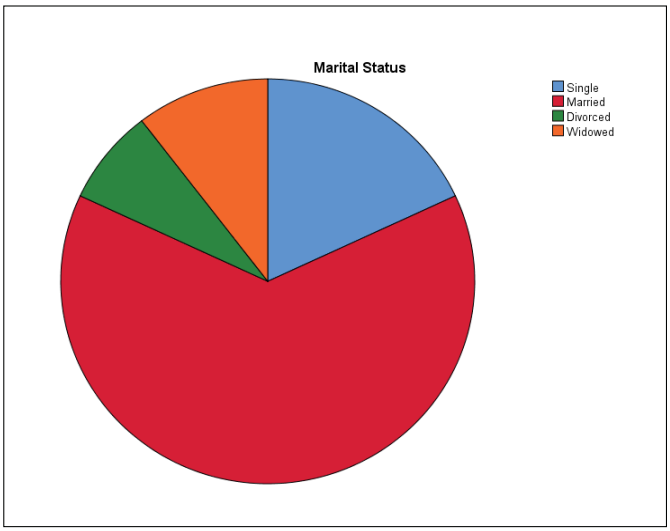
		Frequency	Percent (%)
Gender	Male	36	25
	Female	108	75
Age	Below 20 years	3	2.1
	20 – 29 years	17	11.8
	30 – 39 years	56	38.9
	40 – 49 years	45	31.3
	above 50 years	23	16.0
Marital status	Single	26	18.1
	Married	92	63.9
	Divorced	11	7.6
	Widowed	15	10.4
Educational Level	None	14	9.7
	Primary	36	25.0
	Secondary	72	50.0
	Tertiary	5	3.5
	Graduate	13	9.0
	Post Graduate	4	2.8
Occupational Status	Skilled worker	51	35.4
	Semi – Skilled worker	38	26.4
	Unskilled worker	30	20.8
	Unemployed	25	17.4
Monthly Income	≤ #20, 000	105	72.9
	#20, 000 - #30, 000	22	15.3
	#30, 000 – #40, 000	5	3.5
	#40, 000 - #50, 000	4	2.8
	≥#50, 000	8	5.6
Religion	Christianity	135	93.8
	Islam	5	3.5

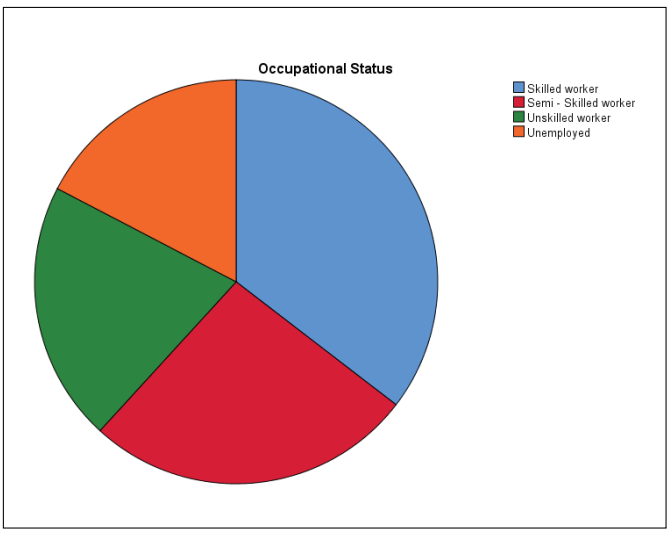
	Others	4	2.8
Duration of Diagnosis	0 – 12 Months	38	26.4
	13 – 36 Months	42	29.2
	>36 Months	64	44.4
HIV/ AIDS stages	Asymptomatic	132	91.7
	Symptomatic	11	7.6
	AIDs	1	0.7
On ART	Yes	138	95.8
	No	6	4.2
Hypertensive Patient	Yes	14	9.7
	No	130	90.3
Diabetic Patient	Yes	4	2.8
	No	140	97.2
Other Disease	Yes	3	2.1
	No	141	97.9

Table 1: Demographic Information of Respondents.









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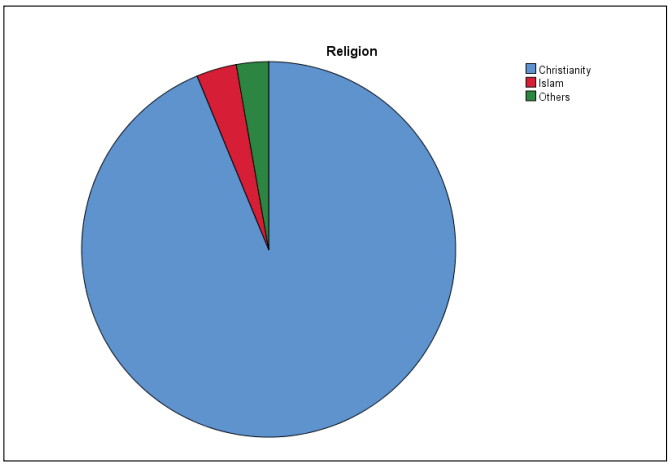

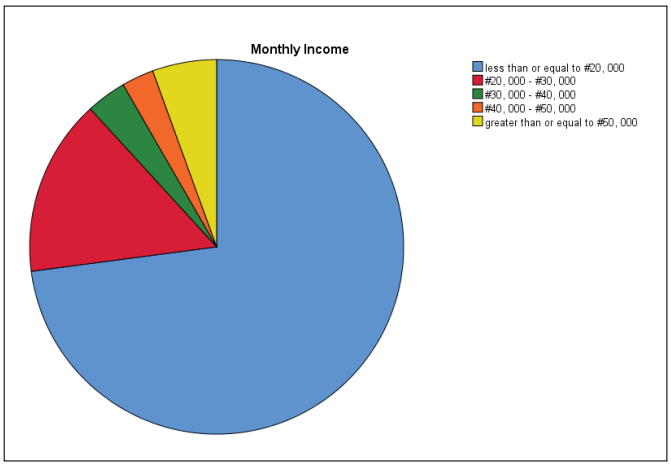

Depression scale	A little of the time		Some of the time		Good part of the time		Most of the time		Mean	Standard Deviation
	Frequency	Percent (%)	Frequency	Percent (%)	Frequency	Percent (%)	Frequency	Percent (%)		
I feel down – hearted and blue	69	47.9	39	27.1	15	10.4	21	14.6	47.92	27.02
Morning is when I feel the best	43	29.9	17	11.8	24	16.7	60	41.7	67.53	32.13
I have crying spells or feel like it	89	61.8	33	22.9	14	2.8	18	12.5	40.83	25.86
I have trouble sleeping at night	83	57.6	28	19.5	9	6.3	24	16.7	44.81	28.78
I eat as much as I do	31	21.5	18	12.5	31	21.5	64	44.4	72.22	29.88
I still enjoy sex	70	48.6	26	18.1	13	9.0	35	24.3	52.27	31.14
I notice that I am losing weight	91	63.2	24	16.7	17	11.8	12	8.3	41.32	24.62
I have trouble with constipation	113	78.5	17	11.8	4	2.8	10	6.9	34.55	21.11
My heart beats faster than usual	94	65.3	24	16.7	4	2.8	22	15.3	42.01	27.36
I get tired for no reason	89	61.8	24	16.7	9	6.3	22	15.3	43.75	27.81
My mind is as clear as it used to be	48	33.3	18	12.5	27	18.8	51	35.4	64.06	31.94
I find it easy to do things I used to	38	26.4	24	16.7	16	11.1	66	45.8	69.09	31.98
I am restless and can't keep still	97	67.4	23	16.0	7	4.9	17	11.8	40.28	25.62

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I feel hopeful about the future	9	6.3	19	13.2	25	17.4	91	63.2	84.37	23.44
I am more irritable than usual	96	66.7	26	18.1	8	5.6	14	9.7	39.58	24.29
I find it easy to make decisions	35	24.3	23	16.0	24	16.7	62	43.1	69.62	30.89
I feel that I am useful and needed	16	11.1	15	10.4	16	11.1	97	67.4	83.68	26.33
My life is pretty full	11	7.6	13	9.0	24	16.7	96	66.7	85.59	23.57
I feel that others would be better off if I were dead	104	72.2	8	5.6	8	5.6	24	16.7	41.67	28.97
I still enjoy the things I used to do	16	11.1	14	9.7	33	22.9	81	56.3	80.76	26.29
AVERAGE									**57.29**	**27.45**

Table 2: Measurement of Depression Prevalence.

Psychiatric variables	Respondents (n=144)
Depression level	
Absent	75 (52.08%)
Mild	45 (31.25%)
Moderate	19 (13.20%)
Severe	5 (3.47%)

Table 3: Level of Depression in People living with HIV/AIDS.

		Depression		Statistical Significance of Association		
Variables	**Subject Studied (N = 144)**	**Number**	**Prevalence Rate (%)**	**Chi – Square**	**df**	**P - Value**
Age (Years)				179.551a	128	0.002*
Below 20	3	2	60.2			
20 - 29	17	10	58.8			
30 – 39	56	27	48.2			
40 – 49	45	18	40			
Above 50	23	12	52.2			
Gender				49.184a	32	0.27
Male	36	20	55.6			
Female	108	49	45.4			
Marital Status				128.420a	96	0.15
Single	26	13	51.5			
Married	92	44	47.8			
Divorced	11	7	63.6			
Widowed	15	5	33.3			
Co – habiting	0	0	0			
Religion				50.633a	64	0.888
Christianity	135	62	45.9			
Islam	5	4	80			
Others	4	3	75			
Education						

None	14	9	64.3	181.222a	160	0.120
Primary	36	14	38.9			
Secondary	72	35	48.6			
Tertiary	5	3	60			
Graduate	13	6	46.2			
Post – Graduate	4	2	50			
Occupation						
Skilled Worker	51	25	49.0	110.707a	96	0.145
Semi – Skilled Worker	38	20	52.6			
Unskilled Worker	30	14	46.7			
Unemployed	25	10	40			
Monthly Income (#'000)				146.115a	128	0.131
≤ 20	105	52	49.5			
20 – 30	22	10	45.5			
30 – 40	5	2	40			
40 – 50	4	2	50			
≥50	8	3	37.5			
Duration of Diagnosis (Months)				87.560a	64	0.027*
0 – 12	38	28	73.7			
13 – 36	42	19	45.2			
>36	64	22	34.4			
HIV/ AIDS Stages				92.818a	64	0.11
Asymptomatic	132	63	47.7			
Symptomatic	11	6	54.5			
AIDS	1	0	0			
ART				34.343a	32	0.356
Yes	138	67	48.6			
No	6	2	33.3			
Hypertensive				58.649a	32	0.03*
Yes	14	4	28.6			
No	130	65	50			
Total						
Diabetic				63.771a	32	0.01*
Yes	4	3	75			
No	140	66	47.1			
Total						
Other Disease				12.627a	32	0.999
Yes	3	1	33.3			
No	141	68	48.2			
Blood Pressure						
Blood Pressure	144	**69**	47.9	682.124a	567	0.001*

Table 4: Association of Depression with Demographics and clinical variables.

DISCUSSION

This study observed the prevalence of depression among people living with HIV/AIDS. Our study showed that 47.92% of the participants were depressed. This is similar to study done in USA and Uganda with a prevalence rate of 45% and 47% respectively [36,37]. The prevalence rate seen among these patients were due to various factors. Firstly, social stigma is a major factor responsible for high rate of depression. Previous studies shows that stigma has an association to unsafe sex practices, delay in seeking HIV/AIDS treatment, poor retention in follow-up and poor ART adherence [38-41]. Also study by Getachew *et al.,* shows a great association of depression with perceived HIV stigma which was 3.6 times having depression in comparison to non-stigmatized HIV patients [42]. Secondly, antiretroviral drugs has been attributed to prevalence rate of depression among HIV/AIDS patients. Side effects of some of the ART drugs can lead to poor adherence to ART causing a high depression rate among people living with HIV/AIDS. A study by Lowther et al showed a high prevalence rate of depression among people living with HIV/AIDS on ART compared to the general population [43]. Lastly, poor social support from relatives and friends has been related to high level of depression among people living with HIV in their first 6 months of diagnosis. However, 3.5% of the respondents had severe depression which have a high tendency of suicidal attempts. This correlates to study by Obadeji *et al*. which shows a strong association between suicidal attempts and depression [44]. Also in our study, most of the respondents (52.08%) have less depression rates due to strong family

support from their relatives, good adherence to ART and ability to overcome stigmatization associated with the infection.

In this study, high rate of depression were more common among females than males as shown in Table 4. This was also in correlation to reports made by other researchers [33,45,46]. A higher proportion of the HIV/AIDS patients were married. This was supported by Florence et al., in their study showing a high level of HIV/AIDS among married women and men [47]. Our study shows no significant association between marital status and depression which shows the impact of mental, economical and social stability to patients to reduce the depression rate. This was in compliance with previous studies [48,49] stating importance of good family support on depression level. However, fewer number of the patients were known to be living without their spouses especially the divorced experience high prevalence rate of depression among themselves which is due to stress faced in taking care of family and children. This was supported by Bhatia et al. in his study showing high prevalence rate of depression among the divorced or widowed [50]. Level of education plays an important role in the reduction of risk of depression. Those with higher level of education are less depressed compared to the people with lower level of education. Our study shows a prevalence rate 64.3% of depression among the illiterates in comparison with 50% seen among people with Post graduate level of education. This was also demonstrated in a study that shows relationship between the level of education and depression, where high prevalence rate are seen among the illiterates. Low prevalence rate among people with high level of education is due to their accessibility to information and knowledge about HIV/AIDS and other illness [47].

Majority of the respondents that are depressed in the study are skilled worker which is in correlation with the study by Reis et al., which demonstrated that employed individuals were 1.85 times more likely to develop depressive symptoms than those who were not employed [51]. High prevalence rate of depression (49.5%) is seen among the skilled worker that earns less than 20,000naira (50dollars) per month which is due to poor funds needed by them to purchase drug for self-maintenance. Importance of financial stability in the mental health of HIV patients was stressed in a study by Knowlton et al [38].

A significant association exists between age and depression in the study, Majority of depressed participants are below 40 years of age which was also supported by Reis et al., in their study which shows that individual under the age of 40 were 1.8 times more likely to develop depressive symptoms than those over 40 years [52]. Most of people under the age bracket (active workforce in reproductive age) are easily depressed due to burden of marriage, low economy income. This was also emphasized by Knowlton *et al* [38].

Depression is shown to be strongly related to duration of diagnosis of patients. According to our study, Patients on diagnosis for more than a year shows a low prevalence rate of depression in comparison with high prevalence rate of depression (73.7%) among people on less than a year of diagnosis This was also reported in other studies which shows prevalence rate as high as 63% and 77.1% [46,53].

Medical comorbidities majorly Hypertension and Diabetes unrelated to HIV are strongly associated with depression among people living with HIV/AIDS in our study. This was also similar to a meta-analysis study which shows that the influence of depression on hypertension is time-dependent with reasons due to depression symptoms causing unhealthy lifestyles, its relationship with dysfunction of the autonomic nervous system which leads to arterial pressure elevation [54]. Diabetes and Hypertension are related directly, they are the two final results of metabolic syndrome and as a result, may develop one after the other in an individual [55]. This justifies the significant association of Diabetes and Hypertension with Depression with a p value of 0.01 and 0.03 respectively.

CONCLUSION

Less than half of our respondents are seen to be depressed in this study. This shows factors responsible for this prevalence rate were Stigma, Poor social support, Early disclosure of HIV status and Side effects of the drugs. Moreover, depression increases morbidity of HIV by poor adherence to treatment and various other significant mechanisms. Most of the patients were low-income earners (50 dollars per month) which shows effect of financial hardship on the depression rate among people living with HIV/AIDS. Age, Hypertension and Diabetes was also shown to have a strong association with depression among people living with HIV/AIDS in the study.

Our findings also highlighted prominent effect of psychological, health care and social factors on depression among people living with HIV/AIDS which are important for reduction in the prevalence rate of depression among them. A good family support, availability of funds and compliance to treatment will reduce the prevalence rate of depression among people living with HIV/AIDS.

RECOMMENDATION

A good financial and social support should be provided for patients with early diagnosis of HIV/AIDS to prevent suicidal thoughts and depression among themselves. Research should be done on risk factors of depression to strengthen and broaden the findings in a low resource environment. Early detection and effective treatment should be done to improve adherence to ART and thus improving quality of life. Social intervention should also pay attention on changing social stigma against people living with HIV/AIDS by creating awareness of the disease and rendering medical assistance to people living with HIV/AIDS.

Government should encourage both the international and local NGO's to meet their functional responsibility which include forming a bridge between the government health services and the patient, provision of counselling and support to the patient and counterpart funding for the HIV program.

CONFLICT OF INTEREST

The authors declare no competing interest.

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