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# Prevalence of psychiatric comorbidities among adult out-patients living with HIV/AIDS in a tertiary care center, North-Central Nigeria: a cross-sectional study

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## Abstract

**Background** Psychiatric disorders had been reported with higher prevalence among people living with human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS), [PLWHA] than the general population and its presence could confer poorer prognosis on infected individuals. However, there is limited research on the above subject matter in the North-Central part of Nigeria. Thus, this study aimed to determine the prevalence of common psychiatric disorders (CPD) among adult out-patients PLWHA at the University of Ilorin Teaching Hospital (UIITH), Ilorin, North-Central Nigeria.

**Methods** It was a hospital-based descriptive cross-sectional study, conducted among 363 respondents attending the UIITH Highly Active Antiretroviral Therapy (HAART) clinic between March and May 2019. Interviewer-administered questionnaires were used to collect data. Mini International Neuropsychiatric Interview (MINI) was used to assess the prevalence of CPD among respondents. Data were analysed using the Statistical Package for Social Sciences version 21 and  $p$  value of  $<0.05$  was taken as statistically significant.

**Results** The prevalence of depression was 24.5%, anxiety disorder (AD) was 16.8% and alcohol use disorder (AUD) was 0.6%. Respondents from the extended family type were more depressed 70.4% and about half 43.3% of the nuclear family had AD while a 1.6% prevalence of AUD was found among the nuclear family. The association was statistically significant with a  $p$  value of 0.001.

**Conclusion** CPD exist among PLWHA with increasing prevalence therefore screening for these disorders should be encouraged during routine management of PLWHA to improve their psychological well-being.

**Keywords** People living with HIV/AIDS, Common psychiatric disorder, Depression, Anxiety disorder, Alcohol use disorder

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## Introduction

There have been several studies that indicate a higher prevalence of psychiatric comorbidities among people living with human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS), [PLWHA], in comparison to the general population with other chronic diseases such as diabetes mellitus, pulmonary tuberculosis, and other sexually transmitted diseases (STDs) [1, 2]. PLWHA have been reported to consistently have a higher rate of psychiatric comorbidities than those individuals who are uninfected with HIV infection [1, 2]. Studies within and outside Nigeria have shown that among non-communicable diseases, psychiatric illnesses like common psychiatric disorders (CPD) are the most prevalent, and most important cause of disability in low-income countries accounting for 13% of the global burden of disease [3–5]. CPD is a term used to describe a group of psychiatric disorders that frequently occur in primary care patients [6, 7]. These disorders have been known to increase HIV disease progression, increase the risk of transmission, cause poor medication adherence, subsequently impair immune function, reduce quality of life and contribute significantly to premature deaths among PLWHA [7–9].

In Nigeria, an estimated 3.4% of the total population is living with HIV/AIDS and globally about 36.7 million people are infected and living with HIV/AIDS [10, 11]. HIV infection is a chronic non-curable communicable disease that exposes infected individuals to mental stress and psychological issues like fear, anxiety, suicidal thoughts and ideation, substance misuse and depression [8, 9, 12]. It has been reported to have psychopathological effects on infected individuals and found to increase morbidity and mortality among PLWHA with comorbid psychiatric disorders [13]. With the introduction of highly active antiretroviral therapy (HAART) in 1990, which tends to increase life expectancy among PLWHA, mental health issues have come to the fore as a critical problem due to its chronicity [14]. Worldwide, psychiatric disorders are of serious and growing public health concern, constituting the brunt of the non-fatal burden of disease [8]. The increasing prevalence of psychiatric disorders comorbid with HIV/AIDS infection among PLWHA is alarming and needs an aggressive response [15, 16]. In Nigeria, 56.7% prevalence was reported among PLWHA, likewise, 63% was found in Yaoundé Cameroon, 57% of pregnant and HIV-infected women in Tanzania, and 46.4% in the Oromia region of Ethiopia [17–20]. Depression in PLWHA has been noticed to be associated with increased HIV risk behaviours and poor treatment outcomes, and failure to address and recognize this could endanger not only the affected individuals but the community at large [8, 21].

CPD is one of the comorbidities that are often overlooked and undermined in treating patients with HIV/AIDS and such health problems are important to be addressed because they can act synergistically to the detriment of the efforts to curb HIV infection [8, 22]. There is a dire need to explore further how common are the CPD among PLWHA in Nigeria. This exploration aims to enhance and provide better healthcare services with a good quality of life [9]. Besides, this study also attempts to bridge the gap by adding to the limited body of knowledge on the prevalence of psychiatric disorders among PLWHA in the North-Central part of Nigeria.

## Materials and methods

The study was conducted at the HAART clinic of the University of Ilorin Teaching Hospital (UIITH), Ilorin. Ilorin is the capital of Kwara State located in the North-Central geopolitical zone. The majority of Ilorin inhabitants practiced Islam, and they are mainly Yorubas, but other ethnic groups also constitute a significant proportion of the population. The study was a hospital-based descriptive cross-sectional study. The participants were consented to adult HIV-positive out-patients aged 18 years and above and had been on antiretroviral for at least 6 months. Patients diagnosed with HIV less than 6 months from the commencement of the study, patients with major chronic medical illnesses (pulmonary tuberculosis, diabetes, systemic hypertension, and chronic kidney disease), patients who were on treatment for mental illness before the diagnosis of HIV and patients who were too sick to participate in the study were all excluded from the study.

The required sample size ( $n$ ) was obtained using Leslie Kish's formula [23]  $n = Z^2 pq/d^2$ .  $n$  = desired sample size (when population > 10,000),  $z$  = standard normal deviation, set at 1.96 which corresponds to a 95% confidence level.  $p$  = proportion of target population based on previous studies, 38.3% prevalence reported in the previous similar study was used [15]. Thus,  $P = 0.383$ ,  $q = 1 - 0.383 = 0.617$ ,  $d$  = Degree of accuracy desired, set at 5% (0.05).

Therefore, 
$$n = \frac{1.96^2 \times 0.383 \times (0.617)}{0.05 \times 0.05} = 363.125 \approx 363$$
 as the minimum sample size.

However, the study population was less than 10,000 (7084 was the average number of adult HIV-positive patients seen annually in the HAART clinic), and the sample size was adjusted using the formula:  $n_f = \frac{n}{1 + (n/N)}$  [23].  $n_f$  = the desired sample size when the population is less than 10,000,  $n$  = estimated sample size = 363,  $N$  = the estimated population size = 7084,  $n_f = \frac{363}{1 + (363/7084)} = 345.306 \approx 345$ . However, to take care of non-respondent or missing data; a 95% response rate was assumed. Hence, the final sample size was adjusted using the formula:  $n_s = n_f / r$  [23].  $n_s$  = adjusted sample size

of the response rate,  $n$  = calculated sample size = 345,  $r$  = response ratio = 0.95.  $n_s = 345/0.95 = 363.16$ . Thus, an approximate sample size of 363 was recruited for the study using a systematic random sampling technique. The participants' informed consent was obtained and confidentially was maintained. The data collection period was 3 months (March to May 2019). HAART clinics were run four times a week and the average daily attendance of adult out-patients per clinic was about 30, making 120 patients in a week and this gave a sample frame of 1440 over 12 weeks. The number of participants interviewed daily was approximately 8, the sample size/total number of clinic days (363/48), and the sampling interval was approximately 4 (1440/363). On each clinic day, the participants' folder was assigned a number from 01 to 30 and the first subject was selected by simple balloting, thereafter every 4th consenting participant was chosen. The selected participants' folders were labeled and their hospital numbers were written in the research register to avoid the pitfall of double sampling. In the circumstances where the ballot picked already interviewed subject, or when the patient declined consent, the next consenting participant was selected. This procedure was repeated every clinic day until the total sample size was obtained.

A pretested interviewer-administered semi-structured questionnaire was used to obtain information on socio-demographic data while a structured questionnaire, Mini International Neuropsychiatry Interview (MINI), was used to obtain information on psychiatric comorbidities among respondents. MINI Questionnaire was designed as a brief structured clinician-administered diagnostic interview, widely used to assess the presence of psychiatric disorders based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) and the International Classification of Diseases (ICD-10) [24, 25]. Studies have shown that it has acceptably high validation and reliability scores [25, 26]. It has been used in some studies in Nigeria and found to be a reliable screening tool in assessing psychiatric disorders among PLWHA in primary care settings [15, 27, 28]. It is divided into modules identified by letters; "As" are for Depression, "Bs" are for anxiety disorder (AD) and "Ds" are for alcohol use disorder (AUD). At the beginning of each module, the screening question(s) correspond to the main criteria of the disorder and at the end, diagnostic box(es) permit(s) the clinician to indicate whether the diagnostic criteria are met or not. During the interview, the subjects will respond "yes" or "no" to each question being asked by the interviewer [24].

The data collected were analyzed using the Statistical Package for Social Science-21 (SPSS 21) software package. Frequency distribution tables and charts were used to describe socio-demographic characteristics. Means

and standard deviations were used for continuous variables and categorical variables were expressed in absolute counts and simple percentages. The chi-square test was used to assess the level of significance of association between categorical variables. A  $p$  value of 0.05 or less was considered statistically significant at a confidence interval of 95%. Ethical approval to conduct the study was received from the Ethical Review Committee of the University of Ilorin Teaching Hospital, Ilorin (approval number: UITH/CAT/189/19<sup>B</sup>/796).

## Results

Table 1 shows the socio-demographic characteristics of the respondents. A total of 363 participants were enrolled in the study. The age group 31–40 years had the highest representative with 128 (35.3%) while the mean age of the respondents was  $44.87 \pm 10.05$ . The majority of the participants were female 262 (72.2%) with a female-to-male ratio of 2.1:1. Slightly more than half of the respondents 196 (54.0%) practiced Islam and larger percentages 300 (82.6%) were Yorubas. 244 (67.2%) were married and 3.0% had no formal education. About half of the respondents were self-employed 167 (46.0%) and more than two-thirds 283 (78.0%) earned below 18,000 nairas monthly. Respondents with household members of six and below 262 (72.2%) were the majority, while about two-thirds 256 (70.5%) of them practiced monogamous family type. Table 2 shows the association between CPD (depression, AD, and AUD) and some socio-demographic characteristics of respondents. Respondents from the extended family type were more depressed 70.4%, about half 43.3% of the nuclear family type had AD while AUD was found in the nuclear family setting with a prevalence of 1.6%. The association was statistically significant with a  $p$  value of 0.001. Figures 1, 2 and 3 show the prevalence of psychiatric comorbidities among the respondents using the MINI assessment tool, the prevalence of depression was 24.5%, AD was 16.8% and that of AUD was 0.6%.

## Discussion

This study showed that most respondents were within their reproductive age groups and they had the highest proportion of 35.3% while the lowest proportion 6.6% was found among elderly patients (> 60 years). The mean age was  $44.87 \pm 10.05$  years. The preponderance of young adults in this study is consistent with the existing literature which reported that HIV infection is more prevalent among the reproductive age groups, and this was attributed to high risky behaviours within the group [29–31]. There were more female respondents 262 (72.2%) than males 101 (27.8%) and this was in tandem with previous studies from Asia and Sub-Sahara Africa (SSA) [3, 7, 32, 33]. This could be because women are more prone

**Table 1** Socio-demographic characteristics of respondents, N = 363

| Variables                           | Frequency            | Percentage (%) |
|-------------------------------------|----------------------|----------------|
| Age groups                          |                      |                |
| ≤ 30                                | 30                   | 8.2            |
| 31–40                               | 128                  | 35.3           |
| 41–50                               | 108                  | 29.8           |
| 51–60                               | 73                   | 20.1           |
| ≥ 61                                | 24                   | 6.6            |
| Mean ± SD <sup>a</sup>              | <b>44.87 ± 10.05</b> |                |
| Gender                              |                      |                |
| Male                                | 101                  | 27.8           |
| Female                              | 262                  | 72.2           |
| Religion                            |                      |                |
| Islam                               | 196                  | 54.0           |
| Christianity                        | 167                  | 46.0           |
| Ethnicity                           |                      |                |
| Yoruba                              | 300                  | 82.6           |
| Igbo                                | 19                   | 5.2            |
| Hausa                               | 2                    | 0.6            |
| Others <sup>b</sup>                 | 42                   | 11.6           |
| Marital status                      |                      |                |
| Single                              | 33                   | 9.1            |
| Married                             | 244                  | 67.2           |
| Separated                           | 5                    | 1.4            |
| Widow                               | 81                   | 22.3           |
| Family type                         |                      |                |
| Monogamous                          | 256                  | 70.5           |
| Polygamous                          | 107                  | 29.5           |
| Educational level                   |                      |                |
| Uneducated                          | 11                   | 3.0            |
| Primary                             | 109                  | 30.0           |
| Secondary                           | 107                  | 29.5           |
| Tertiary                            | 127                  | 35.0           |
| Others <sup>c</sup>                 | 9                    | 2.5            |
| Main occupation                     |                      |                |
| Civil servant                       | 63                   | 17.4           |
| Trader/self-employed                | 167                  | 46.0           |
| Artisan                             | 76                   | 20.9           |
| Farmer                              | 12                   | 3.3            |
| Retired                             | 5                    | 1.4            |
| Unemployed                          | 9                    | 2.5            |
| Others <sup>d</sup>                 | 31                   | 8.5            |
| Average monthly income <sup>e</sup> |                      |                |
| ≤ 18,000                            | 283                  | 78.0           |
| > 18,000                            | 80                   | 22.0           |
| Household size                      |                      |                |
| ≤ 6                                 | 262                  | 72.2           |
| > 6                                 | 101                  | 27.8           |
| Mean ± SD                           | <b>4.90 ± 2.22</b>   |                |

<sup>a</sup> Standard deviation<sup>b</sup> Others are the other ethnic groups found in Kwara such as Nupe, Baruba, Fulani**Table 1** (continued)<sup>c</sup> Technical school, Islamic school<sup>d</sup> Including private company workers, laborers<sup>e</sup> The cut-off of 18,000 naira per month was based on the national minimum wage

to being infected with HIV than their male counterparts [34]. The majority of the respondents (67.2%) were married and the most prevalent family type was a monogamous family setting 256 (70.5%).

In this study, the prevalence of depression among respondents was 24.5% using the MINI questionnaire. This is comparable to what was reported by Egbe and colleagues in Abuja, where 28.2% of PLWHA had depression and Ofovwue et al. in the University of Benin Teaching Hospital with a 27.3% prevalence [9, 35]. However, it was lower than the prevalence reported by Adeoti et al. (39.6%) in Ado-Ekiti [32]. Marwick et al. in Tanzania and Balasubramaniam et al. in India also reported lower prevalences of 15.5% and 14.0% respectively [36, 37]. The reasons for the disparity may probably be related to the difference in the sample population and research tools used in their various studies. For instance, the study done in Abuja was a cross-sectional descriptive study involving three HAART clinics across the city with a large sample population of 1187, and the WHO World Mental Health Composite International Diagnostic Interview questionnaire was used to diagnose depression [35]. Likewise, Ofovwue et al. in Benin City with a sample population of 113, diagnosed depression by using Symptoms Checklist-90 (SCL-90) [9]. The study by Adeoti et al. was conducted among 424 adults with PLWHA using Hospital Anxiety and Depression Scales (HADS) to diagnose depression [32]. In Tanzania, depression was diagnosed among 220 adults PLWHA using the Clinical Interview Schedule-Revised (CIS-R) questionnaire while in the Indian study, the participants were 208 and the Beck Depression Inventory Ia (BDI-Ia) was used to diagnose depression [36, 38]. Other reasons for the disparity in prevalence may be due to the effect of high levels of stigmatization, social isolation, and rejection towards PLWHA in the various study locations. In addition, the psychological and or emotional disturbance of living with an incurable disease, inadequate family support, unemployment, and the incapacitation that could occur in the lives of the respondents may have contributed to the difference in the prevalence of depression in these studies [8, 9, 39, 40]. This suggests that depression in adults with HIV/AIDS is a significant comorbidity. The high prevalence of depression among respondents in this study emphasizes the importance of routine screening for CPD and a holistic care approach by the physicians managing PLWHA.

**Table 2** Relationship between CPD and socio-demographic variables

| Variables            | M.I.N.I assessment   |                            |                                | $\chi^2$ | P            |
|----------------------|----------------------|----------------------------|--------------------------------|----------|--------------|
|                      | Depression n = 89(%) | Anxiety disorder n = 63(%) | Alcohol use disorder n = 2 (%) |          |              |
| Age groups           |                      |                            |                                | 9.143    | 0.058        |
| ≤ 30                 | 9 (60.0)             | 6 (40.0)                   | 0 (0.0)                        |          |              |
| 31–40                | 31 (56.4)            | 24 (43.6)                  | 0 (0.0)                        |          |              |
| 41–50                | 36(63.2)             | 19 (33.3)                  | 2 (3.5)                        |          |              |
| 51–60                | 11 (50.0)            | 11 (50.0)                  | 0 (0.0)                        |          |              |
| ≥ 61                 | 2(40.0)              | 3(60.0)                    | 0 (0.0)                        |          |              |
| Gender               |                      |                            |                                | 0.094    | 0.759        |
| Male                 | 26 (63.4)            | 14 (34.1)                  | 1 (2.5)                        |          |              |
| Female               | 63 (55.8)            | 49 (43.4)                  | 1 (0.8)                        |          |              |
| Marital status       |                      |                            |                                | 1.992    | 0.574        |
| Single               | 11 (57.9)            | 8 (42.1)                   | 0 (0.0)                        |          |              |
| Married              | 60 (58.3)            | 42 (40.8)                  | 1 (0.9)                        |          |              |
| Separated            | 1 (100)              | 0 (0.0)                    | 0 (0.0)                        |          |              |
| Widowed              | 17 (54.8)            | 13 (41.9)                  | 1 (3.3)                        |          |              |
| Family type          |                      |                            |                                | 10.146   | <b>0.001</b> |
| Nuclear              | 70 (55.1)            | 55 (43.3)                  | 2 (1.6)                        |          |              |
| Extended             | 19 (70.4)            | 8 (29.6)                   | 0 (0.0)                        |          |              |
| Education level      |                      |                            |                                | 1.808    | 0.771        |
| Uneducated           | 2 (50.0)             | 2 (50.0)                   | 0 (0.0)                        |          |              |
| Primary              | 29 (56.9)            | 21(41.2)                   | 1 (1.9)                        |          |              |
| Secondary            | 29 (59.2)            | 19 (38.8)                  | 1 (2.0)                        |          |              |
| Tertiary             | 27 (56.3)            | 21 (43.7)                  | 0 (0.0)                        |          |              |
| Others <sup>a</sup>  | 2 (100)              | 0 (0.0)                    | 0 (0.0)                        |          |              |
| Main occupation      |                      |                            |                                | 6.672    | 0.352        |
| Civil servant        | 14 (51.9)            | 13 (48.1)                  | 0 (0.0)                        |          |              |
| Trader/self-employed | 37 (57.8)            | 26 (40.6)                  | 1 (1.6)                        |          |              |
| Artisan              | 26 (65.0)            | 13 (32.5)                  | 1 (2.5)                        |          |              |
| Farmer               | 2(50.0)              | 2 (50.0)                   | 0 (0.0)                        |          |              |
| Retired              | 2(66.7)              | 1 (33.3)                   | 0 (0.0)                        |          |              |
| Unemployed           | 1(25.0)              | 3 (75.0)                   | 0 (0.0)                        |          |              |
| Others <sup>b</sup>  | 7(58.3)              | 5 (41.7)                   | 0 (0.0)                        |          |              |
| Average monthly      |                      |                            |                                | 0.197    | 0.657        |
| ≤ 18,000             | 71(58.2)             | 50 (40.9)                  | 1 (0.9)                        |          |              |
| > 18,000             | 18(56.3)             | 13 (40.6)                  | 1 (3.1)                        |          |              |
| Household size       |                      |                            |                                | 0.513    | 0.474        |
| ≤ 6                  | 67(58.8)             | 45 (39.5)                  | 2 (1.7)                        |          |              |
| > 6                  | 22(55.0)             | 18 (45.0)                  | 0 (0.0)                        |          |              |

$\chi^2$  chi-square test,  $p = p$  value < 0.05 (statistically significant)

<sup>a</sup> Technical school, Islamic school

<sup>b</sup> Private company workers, laborers.  $n_1$  = respondents with depression,  $n_2$  = respondents with AD,  $n_3$  respondents with AUD

The prevalence of AD in this study was 16.8% using the MINI questionnaire. This is comparable to the finding by Ofovwe et al. in Benin City, South-South Nigeria where a prevalence of 15.9% was reported [9]. It was lower compared to the findings from the studies conducted by Olagunju et al. in Lagos University Teaching Hospital

(LUTH) and Adeoti et al. in Ado-Ekiti with 21.7% and 32.6% respectively [32, 41]. In Ethiopia, a higher prevalence of 32.4% was reported by Tesfaw and colleagues while a lower prevalence of 1.4% was reported in India by Balasubramaniam et al. among similar respondents [12, 37]. These variations could be attributed to the

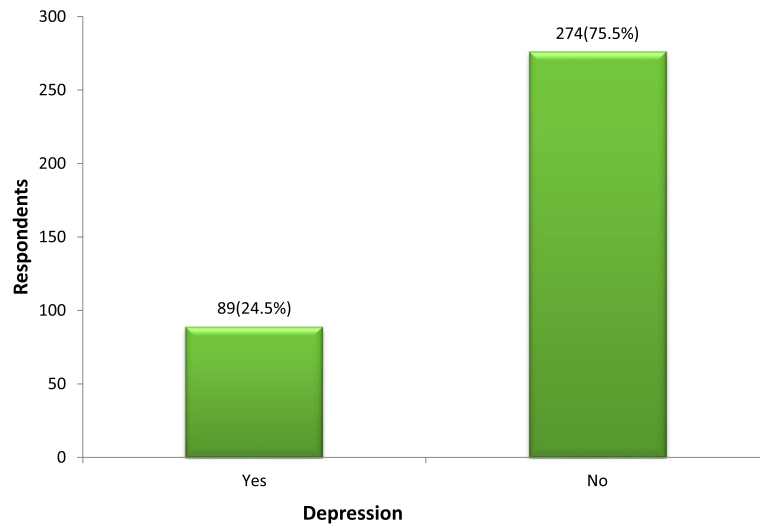


Fig. 1 Prevalence of depression among the respondents 24.5%

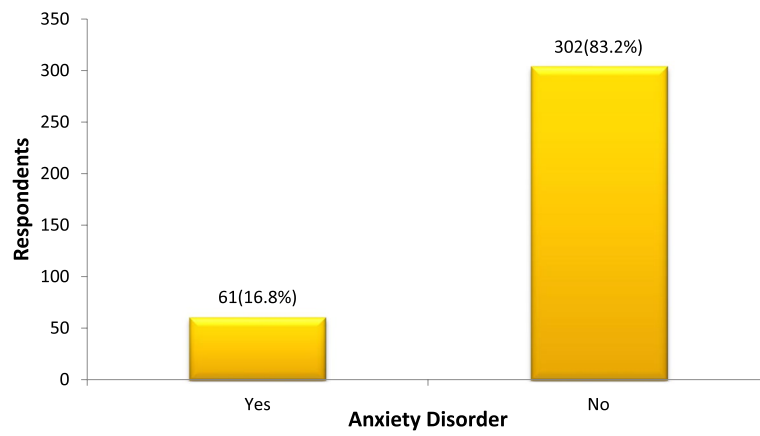


Fig. 2 Prevalence of anxiety disorder among respondents 16.8%

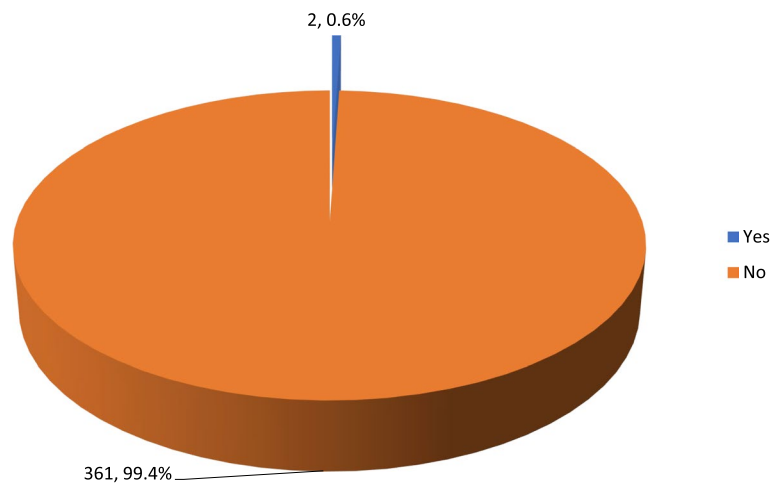


Fig. 3 The pie chart shows the prevalence of AUD among the respondents to be 0.6%



differences in the sensitivity of research screening tools used for their studies, the population of respondents, the methodology employed, and differences in geographical locations. Olagunju et al. in LUTH assessed AD among 300 respondents in a descriptive cross-sectional study with the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) tool while Adeoti et al. used HADS to diagnose AD among 424 respondents [32, 41]. In Ethiopia, Tesfaw and colleagues also used HADS to diagnose AD among a slightly higher number of respondents (417) than in the index study [12]. Balasubramaniam et al. in India carried out their study among a larger population of 11,476 over two consecutive years and AD was assessed by the International Classification of Diseases (ICD-10) criteria [37]. The finding from this study further revealed the relative presence of AD among PLWHA; therefore, healthcare providers must be aware of this condition and be ready to screen PLWHA to provide holistic care to affected individuals. This will further improve the overall health of the patients and by extension, the nation at large.

AUD prevalence in this study was 0.6% using the MINI screening tool. This lower prevalence could be because the Ilorin metropolis where the study was conducted is predominantly dominated by Muslim faithful whose faith does not permit the consumption of alcohol. Other possibilities include the under-reporting of alcohol use by the participants and the dominance of the female gender among the respondents. This finding is in contrast with the previous research reports from the same geo-political zone (North Central zone, Nigeria) where the higher prevalence of 7.8% and 12% were separately reported by Egbe et al. and Farley et al. respectively [35, 42]. Likewise, Gebre and colleagues in West Ethiopia found an 18.4% prevalence of AUD [43]. In Southern Brazil, da Silva et al. also found a 28.6% prevalence of AUD [44]. The disparity may be related to the religious backgrounds of the respondents, economic status, socio-cultural activities, sensitivity of the screening tools, methodology employed, and the study population. For instance, the Abuja study by Egbe et al. was conducted in a multicenter with 1187 respondents of different religious backgrounds and socio-cultural beliefs, and the WHO Mental Health Composite International Diagnostic Interview questionnaire was used to diagnose AUD [35]. On the other hand, Farley and colleagues conducted their study at the University of Abuja Teaching Hospital, and the Alcohol Use Disorder Identification Test (AUDIT) tool was used [42]. Other reasons for the differences in prevalence which is in consonance with previously documented wide variations across populations may be due to differences in literacy, unawareness of the effects of alcohol misuse, and occupational status of the population concerned [44].

A higher prevalence of depression was found among those with extended family structure (70.4%) than the nuclear family type with a proportion of 55.1%. Generally, there is a dearth of published literature on the association between depression and extended family structure among PLWHA. However, there exist research studies on the relationship between family support and depression among PLWHA. The presence of a higher prevalence of depression among the extended family type in this study was contrary to the existing studies [8, 45]. The reasons for the higher prevalence of depression among the extended family type in this study could be because too many responsibilities exist within the extended family type, coupled with the absence of a tangible family member who could shoulder such tasks. This might hinder the adequacy of family/social support expected for an HIV-infected family member. In addition, the stigmatization and discrimination associated with HIV disease might prevent infected individuals from disclosing his/her status to family members and this could further worsen the HIV/AIDS disease condition with comorbid psychological stress.

AD was more prevalent (43.3%) among respondents with a nuclear type of family as compared to the extended family structure and the finding was in tandem with the previous study [15, 38]. The reasons for the similarity could be due to urban settings where the studies were carried out in which the majority of inhabitants were educated and engaged in monogamous types of marriage.

The respondents who had AUD (1.6%) were solely found among the nuclear type of family structure with none among extended family, this is in disparity with the previous studies that reported a higher prevalence of AUD among similar respondents. Egbe et al. in Abuja Nigeria reported a 7.8% prevalence of AUD while 14.2% was reported by Bultum et al. in the Oromiya region of Ethiopia [35, 46]. Also, da Silva and colleagues in Southern Brazil reported a 28.6% prevalence rate [44]. The possible explanation for the low prevalence of AUD in this study could be due to socio-economic, and cultural background and monogamous type of marriage among the respondents. Likewise, the number of respondents recruited for each of the studies, the sensitivity of the screening tools, and the methodology employed in the various studies could account for the higher prevalence reported.

## Conclusion

HIV infection is a non-curable debilitating disease that has been turned into a chronic manageable condition with the advent of HAART and may predispose infected individuals to develop CPD. This study observed the prevalence of depression, AD, and AUD among adult

out-patients PLWHA at UITH, Ilorin, Kwara State, Nigeria, using the MINI questionnaire to be 24.5%, 16.8%, and 0.6% respectively. The findings could guide caregivers, especially physicians in screening for these disorders during the routine clinic visit of PLWHA.

### Limitations of the study

This study was a hospital-based cross-sectional descriptive study, and the results may not be generalized for the entire population of PLWHA in Ilorin, Kwara State. The various statistically significant observations between the variables tested in this study were not necessarily causal. The research instruments used for assessing the presence of CPD were based on self-report and observations which are prone to self-report bias.

### Recommendations

#### For policy-makers

Stakeholders and other policymakers should enact policies that would incorporate and strengthen mental health care services into HIV management at various levels of care with adequate training and re-training of the involved health care providers. The Instruments (MINI) used to screen for CPDs could be included in the patient's assessment form to make early diagnosis and prompt provision of holistic and comprehensive care to PLWHA with comorbid psychiatric disorders.

#### For clinicians

Primary care physicians, who offer holistic, coordinated, and comprehensive health care to all patients including PLWHA should be engaged in the proper evaluation, health education, and counseling of HIV/AIDS clients during clinic visits. Routine screening for CPD should be done for all patients with HIV infection to identify those at risk. Referral for further evaluation and management should be made as required.

### Abbreviations

|          |  |
|----------|--|
| AD       | Anxiety disorder   |
| AUD      | Alcohol use disorder   |
| AUDIT    | Alcohol Use Disorder Identification Test   |
| BDI-Ia   | Beck Depression Inventory Ia   |
| CIS-R    | Clinical Interview Schedule-Revised  |
| CPD      | Common psychiatric disorders   |
| DSM-IV   | Diagnostic and Statistical Manual of Mental Disorders IV                           |
| HAART    | Highly active antiretroviral therapy   |
| HADS     | Hospital Anxiety Depression Scales   |
| HIV/AIDS | Human immunodeficiency virus/acquired immunodeficiency syndrome                    |
| ICD-10   | International Classification of Diseases 10  |
| LUTH     | Lagos University Teaching Hospital   |
| MINI     | Mini International Neuropsychiatric Interview                                      |
| PLWHA    | People Living with Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome |
| SCAN     | Schedule Clinical Assessment in Neuropsychiatry                                    |
| SCL-90   | Symptoms Checklists-90   |
| STDs     | Sexually transmitted diseases  |
| UITH     | University of Ilorin Teaching Hospital   |

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### Authors' contributions

I.A.S; Conceptualization & study design, literature review, data collection, data analysis & interpretation, manuscript writing and manuscript revision. K.I.S; Conceptualization & study design, literature review, manuscript revision and final approval. O.L.O; Conceptualization & design of the study, manuscript revision and final approval. O.R.K; Data collection and analysis, manuscript revision and final approval. A.A; Conceptualization & design of the study, manuscript revision and final approval. N.B.C; Manuscript revision and final approval. M.A.A; Manuscript review and final approval. A.A.O; Literature review, manuscript writing, manuscript revision and final approval.

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### Availability of data and materials

All the datasets used and analysed during this current study are available from the corresponding author upon reasonable request.

### Declarations

#### Ethics approval and consent to participate

Ethical approval to conduct the study was received from the Ethical Review Committee of the University of Ilorin Teaching Hospital, Ilorin with approval number: UITH/CAT/189/19<sup>B</sup>/796.

#### Consent for publication

Consent to use and publish the data obtained from the participants was sought and the consent forms were signed.

#### Competing interests

The authors declare no competing interests.

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