Prevalence of Depression, Problematic Drinking and their Correlates among University Students in Southwest Nigeria

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Authors' contributions

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ABSTRACT

Aim: To determine the prevalence and correlations of depression and problematic drinking among undergraduates in a Nigerian University.
Study Design: The study design was a descriptive cross-sectional survey
Methodology: The study was conducted among 412 full-time undergraduates of LAUTECH, 18 years and above and apparently well without previous history of mental illness. Alcohol Use Disorder Identification Test (AUDIT) and Patient Health Questionnaire-9 (PHQ-9) are instruments used for the study. Data analysis was done with the statistical package for social sciences version 21.
Results: Approximately half (49.5%) of the respondents were depressed and 20.4% of them had major depression. The prevalence of problematic alcohol use in the study population was 10.4% mostly among males. There was no significant association between depression, alcohol use and problematic alcohol use (χ^2 = 1.125, df = 1, *P-value* = 0.289) in the study sample.

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Conclusion: The increasing prevalence of depression and problematic drinking among university students is worrisome as this will not only adversely impact their academic performance but future productivity and the risk of other psychosocial and health problems.

1. INTRODUCTION

Depression is a leading contributing factor to mortality among young adults [1] constituting health burden to society [2]. Adewuya et al. [3] reported the prevalence of Major Depressive Disorder in college students with alcohol dependence, alcohol abuse, and hazardous use as 23.8%, 17.2%, and 12.4% respectively. Depression is a risk factor for alcohol-related problems while chronic binge drinking can also result in the development of depressive symptoms [4].

Depression has been linked to alcohol-related problems through various theories. One of such theories is the causal theory which suggests that alcohol abuse or heavy drinking can lead to depression in the short term [5]. Also, neurobiological studies have shown that hippocampal atrophy underlies depression associated with long-term alcohol use [6]. Alcohol-related disorders have also been shown to contribute to an increased risk of depression.

Alcohol is a commonly used substance among the youth in tertiary institutions [7]. On several occasions, it could be a path to the usage of other psychoactive substances. Tertiary education is a transitional period characterized by autonomy or independence from family control, self-decision making, academic pressures, social engagements, sharing hostels with new students of diverse cultural values or family background and peer influence [7]. Other factors shown by researchers to predispose students to alcohol consumption include; ease of availability and accessibility of alcohol [7,8], academic pressures, family member use of alcohol and psychological distress [7].

Furthermore, alcohol is used as self-medication for affective symptoms, which explains the increased rate of alcohol abuse or dependence in those with major depression [9].

In the shared etiology theory, chronic drinking is proposed to result in stressful life situations which indirectly increase the risk of depression [10]. Also, psychosocial stressors could increase the risk of alcohol use, alcohol-related problems and depression [11].

Individual differences in predispositions relating to emotion, cognition, and motivation may also account for the comorbidity of alcohol use, alcohol-related problems and depression [12]. Also, negative emotionality and neuroticism have been extensively linked with internalizing disorders such as depression and alcohol use disorders [13]. Therefore, understanding how these variables are linked to alcohol use may add to the body of knowledge of the etiology of alcohol use.

Problematic alcohol use is a leading cause of morbidity and mortality associated with more than 200 diseases and injuries. Alcohol has also been seen as the gateway to other psychoactive substance use, especially among students [14]. Information from this study may assist in developing school-based alcohol abuse prevention programs towards improving academic performance and future productivity. Also, it may help in reducing the use of other psychoactive substances and the incidence of diseases and disabilities that could result from injuries following substance use (such as those relating to a road traffic accident). Furthermore, it will help in the formulation of policies by relevant stakeholders geared toward the prevention of problems related to problematic alcohol use.

Therefore, the study aimed to understand the prevalence and correlates of depression and problematic drinking among university students in Nigeria.

2. MATERIALS AND METHODS

2.1 Study Area

The study was carried out at Ladoke Akintola University of Technology (LAUTECH), located in Ogbomoso, Oyo, Nigeria, with geographical coordinates 8° 8' 0" North, 4° 16' 0" East. The entire student body population of more than 25,000 is involved in the three academic programs (pre-degree science program, undergraduate programs, and post-graduate

programs) run by the university. The university has seven faculties (Basic medical science, Clinical science, Agricultural Sciences, Environmental Sciences, Engineering, Pure and applied sciences and Management) and twenty-eight (28) departments.

2.2 Study Design

The study design was a descriptive cross-sectional survey.

2.3 Study Population

All full-time undergraduates of LAUTECH,18 years and above, apparently well without previous history of mental illness were recruited for the study. The estimated total full-time student population of this institution as of the period of study was 20000 [15].

2.4 Sample Size

The minimum sample size was determined using Leslie Fisher's fomula [16] for study population above 10,000. Thus, the calculated minimum sample size was 363 using the prevalence rate of alcohol use from previous similar study [17]. A non-response rate of 20% was added and the total sample derived was 436.

2.5 Study Procedure

Multi-stage sampling technique was adopted. Three faculties were selected from the seven faculties in the university by simple random sampling. From the chosen faculties 3 departments were selected randomly. For every selected department, a level/year of study was selected randomly. Proportional sample allocation was done based on the total number of students in each level. Subjects were selected until the total sample size was reached.

The subjects were addressed on the importance of the study, the procedure and the benefits. Consent was taken and questionnaire distribution was interviewer based.

2.6 Study Measures

2.6.1 Alcohol use disorder identification test (AUDIT)

The AUDIT scale consists of 10 items measured on a 4-point Likert format, with a total maximum score of 40. In this environment, a cut-off score

of 5 is recommended when screening for hazardous use, a cut-off of 7 and 9 for harmful use and dependence respectively [18]. The respondents were classified into the following groups: Score "0" as "No alcohol use"; "1-4" as "Normal use"; "5-6" as "Hazardous use"; "7-8" as "Harmful use/Misuse"; "9-40" as "Dependent use".

2.6.2 Patient health questionnaire-9 (PHQ-9)

The PHQ-9 is a self-report questionnaire that consists of 9-items. Participants will rate how they felt in the preceding 2 weeks. Each question is scored 0-3 (0=not at all, 1=several days, 2=more than half the days and 3=nearly every day). The least score is 0 while the highest is 27. The items reflect the DSM- IV criteria for major depressive disorder.

2.7 Statistical Analysis

Data analysis was done with the statistical package for social sciences (SPSS version 21). Association between categorical variables (bivariate) was compared using Chi-Square statistics and Pearson correlation between two continuous variables. Differences in means of continuous variables across categorical variables were compared using the Independent Students T-test (categorical variable at two levels), one-way way analysis of variance (Categorical variable with more than two levels). The confidence level for all the tests was set at 95%. A *P-value* of less than 0.05 was taken as statistically significant.

3. RESULTS

A total of 412 questionnaires were retrieved at a 94% response rate. Of the total 412 respondents, two hundred and twenty-seven (55.1%) were female and one hundred and eighty-five (44.9%) were males. Majority (n = 396, 96.1%) of the respondents fell within 18-25 years. The majority (n = 404, 98.1%) of the respondents were single and three hundred and ninety-seven (96.4%) respondents were Yorubas. Four hundred and one (97.3%) respondents engaged in frequent (at least once a week) religious activities, while (0.7%) were not involved in religious activities at all (Table 1).

Most of the respondents reported that their parents (fathers-75%, mothers-86.2%) do not use psychoactive substances, forty-one respondents (10%) reported having fathers who consumed alcohol only, and 1.7%

Table 1. Socio-demographic profile of respondents

Variables	Frequency (n)	Percentage (%)
Gender		
Male	185	44.9
Female	227	55.1
Age group (years)		
18 – 25 years	396	96.1
26 – 33 years	16	3.9
Mean Age ± SD	21.6 ± 2.27	
Marital status		
Single	404	98.1
Married	7	1.7
Cohabiting	1	0.2
Religion		
Christianity	310	75.2
Islam	101	24.5
Others	1	0.2
Frequency of religious activities		
Frequent	401	97.3
Infrequent	8	1.9
No activity	3	0.7
Ethnicity *		
Yoruba	397	96.4
Igbo	5	1.2
Hausa	1	0.2
Others	8	1.9

Note: * Category where the number of respondents ≠ 412 indicate missing observation

Table 2. Respondents' family background and history related to substance use

Family set up	Frequency (n)	Percentage (%)
Monogamy	331	80.3
Polygamy	81	19.7
Parental occupation	**Father n (%)**	**Mother n (%)**
Armed forces	3 (0.7)	-
Elementary occupation	31 (7.5)	5 (1.2)
Professional/ Managerial	185 (44.9)	165 (40)
Sales and Services	112 (27.2)	228 (55.3)
Skilled Agriculturists	22 (5.3)	3 (0.7)
Technicians	35 (8.5)	1 (0.2)
Retired or late	24 (5.8)	-
Parental substance use *	**Father n (%)**	**Mother n (%)**
No psychoactive substances	309 (75)	355 (86.2)
Alcohol only	41 (10)	5 (1.2)
Alcohol and other substances	7 (1.7)	-
Family history of mental illness *	**Frequency (n)**	**Percentage (%)**
Yes	3	0.7
No	401	97.3

Note: * Category where number of respondents ≠ 412 indicate missing observation

(n =7) reported having fathers who consumed alcohol and other substances. The majority (n = 401, 97.3%) of respondents had no family history of mental illness, and three respondents (0.7%) reported having family members with history of mental illness (Table 2).

The lifetime prevalence of alcohol use in the study population was 31.8%. Seventy-nine respondents (19.2%) used alcohol within the normal range, 13 respondents (3.2%) fell in the harmful use category while the prevalence of hazardous use in the study population was 3.4%

(n =14) and 16 respondents (3.9%) had alcohol dependence. The mean age of onset of alcohol use was 14.49 ± 4.4 years. Among drinkers, majority (n=63, 48.1%) drank with friends, thirty-one (23.7%) respondents drank with family members, 6.1% (n = 8) drank alone, a respondent (0.8%) drank in public places and 15.3% (n = 20) adopted other modes of drinking. The majority (n= 82, 62.6%) consumed alcohol along with food, 11.5% used it with other substances, and 6.1% drank on empty stomach while 11.5% engaged in other forms of drinking. The life time frequency of alcohol use by most (n = 87, 66.4%) of the respondents was high (≥ 21 times), the rate of consumption by majority (n

=79, 60.3%) in the last 12 months was low, and larger proportion (69.4%) had never drunk alcohol in the past 30 days (Table 3).

The prevalence of problematic alcohol use in the study population was 10.4% (n =43). Problematic alcohol use was found to be significantly associated with gender (χ^2 = 15.6, df = 1, *P-value* < 0.001) as most (n =32, 17.3%) respondents with problematic use of alcohol were males. Problematic alcohol use among respondents was unassociated with each of; age category (χ^2 = 1.94, df = 1, *P-value* = 0.164), monthly allowance (χ^2 = 0.171, df = 1, *P-value* = 0.680), family type (χ^2 = 1.066, df = 1, *P-value* = 0.302), parental

Table 3. Prevalence and pattern of alcohol use among alcohol users

Current consumption status	Number of respondents (%)
Drinking	131 (31.8)
Not drinking	281 (68.2)
Age at first intake (Mean ± SD)	14.9 ± 4.4 years
Pattern of use	
No use	290 (70.4)
Normal use	79 (19.2)
Harmful use	13 (3.2)
Hazardous use	14 (3.4)
Dependents use	16 (3.9)
Drinking Setting*	
Drink Alone	8 (6.1)
Drink With Friends	63 (48.1)
Drink with family members	31 (23.7)
Drink in public places	1 (0.8)
Others	20 (15.3)
Forms of drinking*	
Drink on empty stomach	8 (6.1)
Drink with food	82 (62.6)
Drink with other substances	16 (12.2)
Others	15 (11.5)
Lifetime frequency of consumption	
Low (1-10) times	17 (13.0)
Moderate (11-20) times	27 (20.6)
High (≥ 21 times)	87 (66.4)
Frequency of consumption in the last 12 months	
Low (1-10) times	79 (60.3)
Moderate (11-20) times	28 (21.4)
High (≥ 21 times)	24 (18.3)
Frequency of consumption in the last 30 days	
Never	91 (69.4)
1-10 times	31 (23.7)
11-20 times	4 (3.1)
At least 21 times	5 (3.8)

*Notes: * Categories where N<131 indicate missing observations and multiple entries are possible*

Table 4. Relationship between socio-demographic characteristics and problematic alcohol use among respondents

Socio-demographic characteristics	Problematic alcohol use	No Problematic alcohol use	Chi-square Statistic	df	p-value
Sex					
Male	32 (17.3)	153 (82.7)	15.6	1	<0.001*
Female	11 (4.8)	216 (95.2)			
Age categories					
18-25 years	43 (10.9)	353 (89.1)	1.94	1	0.164
26-33 years	0 (0)	16 (100)			
Monthly income**					
≤ N10,000	12 (11.2)	95 (88.8)	0.171	1	0.680
>N10, 000	2 (8.3)	22 (91.7)			
Family type					
Monogamy	32 (9.7)	299 (90.3)	1.066	1	0.302
Polygamy	11 (13.6)	70 (86.4)			
Parental history of substance use**					
Had history	8 (16.3)	41 (83.7)	2.538	1	0.111
No history	29 (9)	293 (91)			
Frequency of religious activities					
No activity	0 (0)	3 (100)			
Frequent	42 (10.5)	359 (89.5)	0.387	2	0.824
Infrequent	1 (12.5)	7 (87.5)			

Notes: *P-value < 0.05 indicate significance
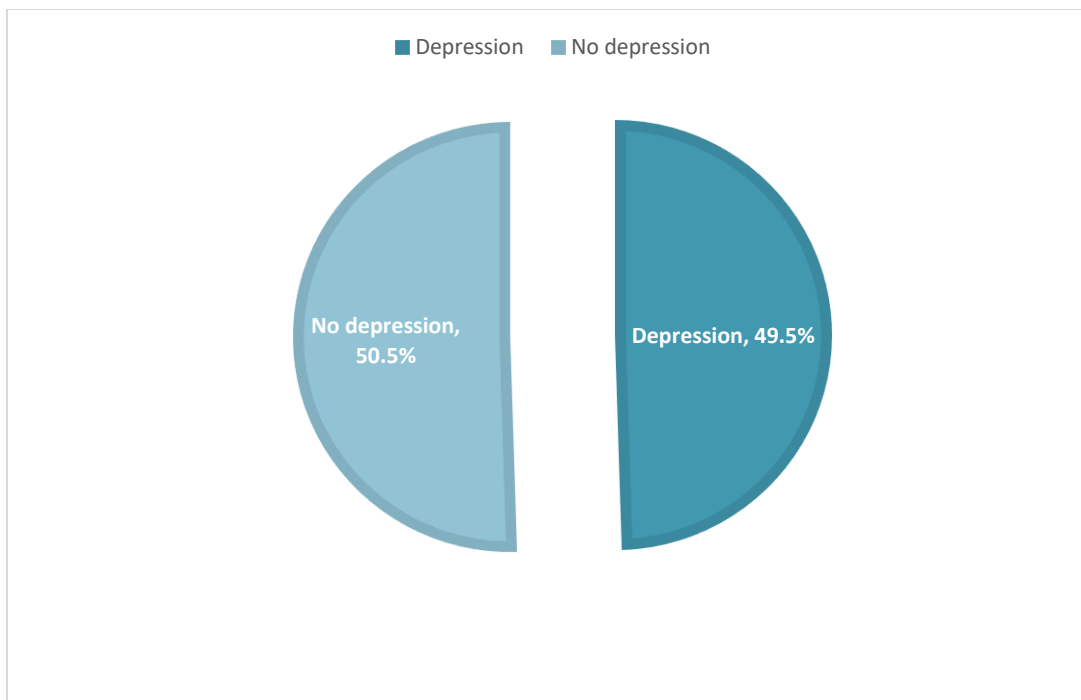*** Categories where no of respondents ≠ 412 indicate missing observations*

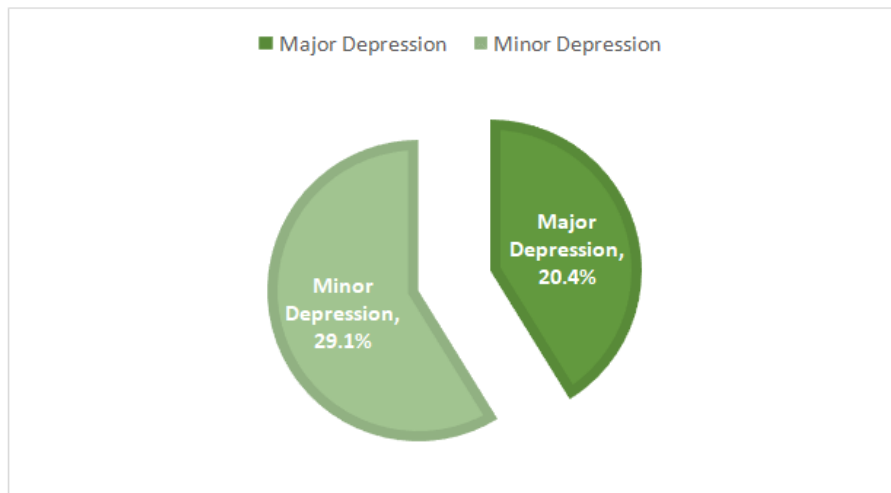**Fig. 1. Prevalence of depression among respondents**

Fig. 2. Severity of depression among respondents

Table 5. Relationship between depression, alcohol use and problematic alcohol use

Variables		No Depression	depression	Chi-square Statistic	df	p-value
Alcohol use						
Yes	n (%)	62 (29.8)	69 (33.8)	0.766	1	0.381
No	n (%)	146 (70.2)	135 (66.2)			
Problematic alcohol use						
Yes	n (%)	183 (88)	186 (91.2)	1.125	1	0.289
No	n (%)	25 (12.0)	18 (8.8)			

history of substance use (χ^2 = 2.538, df = 1, *P-value* = 0.111) and frequency of religious activities (χ^2 = 0.387, df = 2, *P-value* = 0.824) (Table 4).

Approximately half (49.5%) of the respondents were depressed and 50.5% were not depressed.

Among respondents with depressive symptoms, one hundred and twenty (29.1%) had minor depression and eighty-four (20.4%) had major depression (Fig. 2).

Majority (n = 135, 66.2%) of respondents who were depressed were non-drinkers and larger proportion (n = 186, 91.2%) of respondents in this category had problematic alcohol use. There was no significant association between depression and each of alcohol use (χ^2 = 0.766, df = 1, *P-value* = 0.381) and problematic alcohol use (χ^2 = 1.125, df = 1, *P-value* = 0.289) in the study population (Table 5).

4. DISCUSSION

The response rate in this study was 94% which is comparable to other similar studies [19,17,20].

This study found a greater proportion of the respondents to be females (55.1%) while 44.9% of them were males. This is similar to the findings of a study on psychoactive substances among undergraduates in South-Western Nigeria which reported 54.9% preponderance of females among respondents [21]. Most of the earlier studies carried out among the undergraduate population revealed a preponderance of males compared to females [17,20]. The preponderance of female students in colleges is more common in Western countries [22]. However, the tide is changing in Nigeria gradually with a gradual increase in female undergraduates [23]. Also, a study carried out in one of the departments in the same institution recently revealed more female undergraduate admission in the last few years [24]. This might account for the greater number of females compared to males in this study.

The age of the respondents was between 18 and 32 years. Most of the respondents (96.1%) were between the ages 18 and 24 years. Also, the mean age of the respondents was 21.6 years. This is similar to a study among Nigerian

undergraduates that reported 8 in every 10 were between 15 and 24 years [25]. However, another study among undergraduates reported 56.8% of respondents aged 26 and 30 years while 42.8% of respondents were between the ages 21-25 [21]. The mean age reported in this study is similar to the mean age of 21 and 22 years reported in previous studies among undergraduates in South-West and North-Central Nigeria respectively [20,26]. It is noted that the pursuit of higher education in Nigeria tends to start rather early in recent years accounting for younger age at admission. Though this study is a multi-ethnic one, most of the respondents (96.4%) were Yorubas. This is similar to what has been obtained in previous studies among university students in South-West Nigeria [18720]. This is a reflection of South West Nigeria being the homeland of the Yorubas.

About 80% of the respondents were from monogamous families. This is comparable to the findings of previous studies carried out among undergraduates. While Abayomi et al. [20] reported 77% in the study carried out among undergraduates in southwestern Nigeria, Makanjuola et al. [26] reported 79% of respondents in the study carried out among medical students in North-Central Nigeria.

Majority of respondents' fathers were in professional/managerial jobs while more than half of respondents' mothers were into sales/services. This might be due to fathers attaining higher educational status compared to mothers as reported in a study among undergraduates in different institutions of learning in Ogun State, South-West Nigeria [27].

Ten percent of the respondents reported that their fathers consumed alcohol only while less (1.2%) reported their mothers drank alcohol. This is comparable to a similar study among undergraduates which reported that 15.5% of respondents' fathers drank alcohol while 2.6% of respondents' mothers drank alcohol [17].

About 31.8% of respondents in this study had drunk alcohol before either within the category of normal drinking or those considered to be problematic drinking (harmful, hazardous, and dependent use). This is similar to the values reported in some previous studies among undergraduates such as 34.3% reported in Ogun State [17]. However, the prevalence reported worldwide varies with a value of 68% reported among university students in New Zealand [28].

Also, in a sample of undergraduates in Malawi, 72% were reported to have drunk alcohol before [29]. Similar variance has been found in the prevalence reported in different studies among undergraduates in Nigeria. For example, Makanjuola et al. [26] reported 12.5% among undergraduates in Ilorin while Abayomi et al. [20] reported 40.6% among undergraduates in Abeokuta. Also, Adewuya et al. [17] reported a higher value of 61.8% among undergraduates in Ife. The wide range might be due to the difference in the methodology and instruments used in the assessment.

Problematic drinking, which includes harmful use, hazardous use and dependent use, in this study was reported to be found in about 10.5% of the respondents. This is similar to the 14.2% and 10% of the respondents reported in studies among university students in South-West Nigeria [20,25].

The mean age of respondents initiating alcohol use in this study was found to be 14.49 years. This is close to the value reported for Nigerian adolescent and young adults [30] and the value reported in a study among undergraduates in Nigeria [27]. This shows that most students start alcohol use before gaining admission into the university.

This study found that alcohol use was more common among male respondents with about 46.5% of them consuming alcohol compared to 19.8% of female respondents that took alcohol. This is similar to the findings reported in various studies among undergraduates in Nigeria which revealed that more males tend to use alcohol compared to females. Also, studies conducted among university students in western countries have also reported more male students consuming alcohol compared to females [31]. The social and cultural perspective to alcohol consumption in Nigeria differs, which might be responsible for the sex differences in alcohol consumption [30]. Also, there is more societal disapproval to women drinking unlike men who also have traits such as sensation or excitement seeking which is associated with alcohol use [32].

Majority of those who consume alcohol in this study have parents with history of alcohol use with the association being of significant influence. This is similar to the findings in previous studies carried out among undergraduates. Onofa et al. [27] reported that majority of undergraduates

who use alcohol had parents with history of alcohol use. Also, Adewuya et al. [17] reported in the study among undergraduates that parental drinking was independently associated with alcohol use disorder. This might be due to children imitating parent's drinking pattern and also such children might have access to alcohol early in life.

Problematic alcohol use was found to be significantly associated with male gender of respondents in this study. This is similar to findings in previous studies among undergraduates. A study done among undergraduates in South-West Nigeria reported hazardous drinking to be significantly associated with male students [20].

About 49.5% of the respondents in this study had depressive symptoms. Findings from previous studies showed wide range of values in the prevalence of depression among undergraduates. A systematic review of studies of depression prevalence among undergraduates reported a range between 10-85% with a weighted average of 30.6% [33]. Some studies reported lower values such as a study conducted among medical students in Nepal that reported 29.9% [34] and another study carried out among Malaysian undergraduates reported 27.5% [35]. However, studies carried among undergraduates in Egypt and India reported higher values of 65% and 51.3% respectively. In Nigeria, a study among medical undergraduates reported prevalence 23.3% [36].

The wide variation noticed in the prevalence might be due to the instruments used in the assessment of depression; while some studies used screening instruments others used diagnostic instruments. Also, there's variation in the type of screening or diagnostic instruments used across various studies. Furthermore, variation has been noticed in the prevalence of depression across undergraduate population. For example, prevalence of depression is found to be lower among medical undergraduates compared to non-medical undergraduates [37]. These factors might account for the high prevalence reported in this study.

The relationship between depression and alcohol use in this study population was non-linear. There was no significant relationship between depression and alcohol use in this study population.

The relationship between alcohol use and depression was shown by previous studies to be non-linear [38]. Also, another study reported a J-shaped relationship, that is, greater depression was found among those who abstained from alcohol compared to those who took between 1 and 5 drinks of alcohol for former drinkers [39]. This relationship is seen in those who meet the diagnostic criteria for depression. Furthermore, the relationship between alcohol consumption and depression is more related to larger quantities of alcohol intake per occasion and unrelated to frequency of consumption [40]. However, depression has been related to alcohol-related problems mainly through solitary drinking [41]. Another study also reported that the relationship between depression and alcohol use was more significant for females who met the criteria for major depression and those with heavy episodic alcohol consumption [39].

5. CONCLUSION

The prevalence of depression among university students is worrisome as this study revealed that almost half of the subjects were depressed and an appreciable number of them have major depression. Although there was no conclusive link between depression, alcohol use and problematic drinking in this study yet the rising prevalence of alcohol use among students calls for public concern. The effect of alcohol on cognitive function is enormous, especially on students. Heavy drinking could impair judgment, memory unhealthy behaviors which could affect both immediate academic and future performance.

Also, depression is a major cause of suicide and suicidal ideation There is a need for prompt interventions at family, community and government levels to curb this rising menace among university students in order to secure their futures.

ETHICAL APPROVAL AND CONSENT

Ethical clearance was obtained from the Ethical Research Committee of LAUTECH Teaching Hospital, Ogbomoso.

Consent was taken and questionnaire distribution was interviewer based.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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