PREVALENCE AND FACTORS ASSOCIATED WITH DEPRESSION AMONG UNDERGRADUATE HEALTH STUDENTS IN USMANU DANFODIYO UNIVERSITY SOKOTO, NIGERIA

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ABSTRACT

Background: Depression is a common mental disorder, it is a significant contributor to the global burden of disease, and has been associated with suicidal tendencies even among students. This study aimed to assess the prevalence and factors associated with depression among under-graduate health students in Usmanu Danfodiyo University Sokoto, Nigeria.

Methods: A cross-sectional study was conducted among 363 undergraduate health sciences students selected by stratified sampling technique. Data were collected using the Patient Health Questionaire-9 (PHQ-9). Data were analysed using the IBM SPSS version 22 computer statistical software package.

Results: The mean age of the respondents was 23.39 ± 3.44 years. About a third, 105 (30.0%) of the 363 respondents were depressed. Of these, 84 (80%) had mild depression, while about a fifth (21%) had moderate to severe depression. The factors that were found to be associated with depression were respondents' course of study, history of major life events, history of chronic illness, having a family or social problem, concerns about future career, staying off campus, not having family support, not engaging in regular physical exercise and having less than 50% punctuality at lectures.

Conclusion: This study showed a relatively high prevalence of depression among the respondents, and it was associated with their social lifestyle, medical history, and accommodation problems. The primary care facility in the University and family practice physicians should routinely screen undergraduate health students for depression and the University management should provide adequate accommodation, and promote healthy social lifestyles among them (such as participating in extracurricular activities and engaging in regular physical exercise).

Keywords: Depression, prevalence, associated factors, health students

INTRODUCTION

Depression is a significant contributor to the global burden of disease and it affects over 300 million people in all countries across the world with a global prevalence of 4.4%.[1] It has also been discovered to be the most potent single risk factor for attempted or accomplished suicides.[2] Depression is defined as a mood or mental disorder that causes a persistent feeling of sadness and loss of interest in pleasurable activities accompanied by an inability to carry out daily activities for at least 2 weeks.[3] It is characterized by arrays of clinical manifestations such as persistent low mood, anhedonia, anergia, weight changes, poor or increased appetite, insomnia or hypersomnia, psychomotor problems, feeling of worthlessness or excessive guilt, poor concentration, and suicidal ideation.[1] It has been highlighted that If depression is left untreated in the early age of occurrence, it can lead to different problems such as school failure, eating disorders, substance abuse, conduct disorder and delinquency or even suicide.[4] Depressive illness can be treated by lifestyle modifications such as exercise, nutrition, sleep, social support and stress reduction. The medical treatment includes the different drugs like selective serotonin reuptake inhibitors, serotonin and norepinephrine reuptake

inhibitors, tricyclic antidepressants, monoamine oxidase inhibitors, serotonergic antidepressants and interventions like psychotherapy and social rehabilitation.[5]

Students due to the special circumstances, including being away from family, entering into a new community, peer pressure, lack of sufficient income, long educational courses, and existence of educational competition are susceptible to loss of their mental health.[6] Depression and anxiety symptoms are reported to be common among university students Worldwide. This has affected qualities of life and academic achievement over the years.[7]

It has been estimated that 27.2% of medical students worldwide are depressed.[8] According to a study conducted among medical students in Kerala India, more than 30 % of the students were depressed.[9] Similarly a study conducted among medical students in Cameroon revealed that 30 % of the students were depressed.[10] In Nigeria 23% of medical students were found to be depressed.[11]

Globally, depressive disorders are ranked as the single largest contributor to non-fatal health loss (7.5% of all YLD).[1] The proportion of the global population with depression in 2015 is estimated to be 4.4%.[1] Nearly half of these people live in the South-East Asia and Western Pacific Regions. Depressive disorders led to a global total of over 50 million Years Lived with Disability (YLD) in 2015.[1] More than 80% of this non-fatal disease burden occurred in low- and middle-income countries.[1] Studies have found that medical students have a higher risk of suicidal ideation and suicide than age-matched peers and general population,[12] ranging from 9.1% to 48.2%.[12,13]

Medical and paramedical students have a higher risk for depression occurrence than other students due to the existence of several specific problems in their environment such as the close relationship with patients in different situations, sleep deprivation, long working hours, night working, challenging periods in a professional medical students life, and responsibility for saving the life of patients.[6]These stressors often exert an inadvertent negative effect with catastrophic consequences on students' academic performances, physical health and psychological wellbeing with a high frequency of depression, anxiety, stress and even attrition from medical course. Psychological distress among students also reduces their self-esteem, quality of life and the quality of care they provide to patients with decreased empathy. They may engage in potentially harmful methods of coping strategy from stress such as tobacco, alcohol and other substance abuse. Anxiety and depression have a huge effect on society and individuals, which can lead to suicidal tendencies, relationship problems, medical dropouts, and impaired work ability.[14]

Even though depression and anxiety are found to be remarkably high among students in Nigerian universities coupled with their impacts in causing poor academic performance, disability and poor quality of life,[7] literature is scarce on prevalence and factor associated with depression among medical students in the northwest and to the best of our knowledge no study is available on depression among undergraduate health students in Sokoto state. Determining the factors associated with depression will help in identifying relationships that can provide levers which can be targeted to prevent the occurrence of depression among medical students in Sokoto state. Therefore, this study aimed to assess the prevalence and factors associated with depression among medical students in the study area.

Materials and methods

Study Design, Population and Area

A cross-sectional study was carried out among undergraduate students of the College of Health Sciences, Usmanu Danfodiyo University which includes (Medicine and Surgery, Nursing, Radiography, Medical Laboratory Sciences, and Pharmaceutical Sciences) located within Sokoto metropolis, in Sokoto State Nigeria in November 2019. Usmanu Danfodiyo University is one of the eight tertiary institutions and the largest in terms of population and enrollment in the State .It has a total of about 26450 students and annual enrollment of about 6000 students.it has about 18 faculties among which is college of health science which include Medicine and surgery ,nursing ,radiography, Medical laboratory science and pharmaceutical sciences.

Sokoto state is one of the 36 states in Nigeria, located to the extreme north western part of Nigeria between longitudes 4Â°8′E and 6Â°54′E and latitudes 12Â°`N and 13Â°58`N. It shares common borders with Niger republic to the north, Kebbi state to the southwest and Zamfara state to the east. The total land area is about 32,000 sq. km.

Sample size estimation and sampling techniques

The sample size was estimated at 363 using the formula for calculating sample size for cross-sectional study,[16] a 58.2% prevalence of depression in previous study[4] and an anticipated 85% response rate.

Eligible participants were selected by stratified random sampling with proportionate allocation as follows: Number of undergraduates in each department of college of health sciences /Total no of

undergraduates in all the departments in college of health sciences × Minimum sample size calculated i.e., 363

Total number of undergraduate medical students = 1800

Where: MBBS 600 students, Medical Laboratory sciences 400 students, Pharmacy 400 students, Radiography 200 students, and Nursing 200 students.

Therefore; 121,81,81,40 and 40 were proportionately allocated to MBBS,medical laboratory sciences ,pharmacy ,radiography and nursing respectively,also proportionate allocation was also used to select participants across the various level /year of study of the respective courses.

Stratified random sampling with proportionate allocation was used as follows to determine the number of undergraduates to be recruited per department. Total number of undergraduate medical students = 1800

Where: MBBS 600 students, Medical Laboratory sciences 400 students, Pharmacy 400 students, Radiography 200 students, and Nursing 200 students

Number of undergraduates in each department of college of health sciences /Total no of undergraduates in all the departments in college of health sciences × Minimum sample size calculated (363) MBBS 121, Medical Laboratory sciences 81, Pharmacy 81, Radiography 40, and Nursing 40.

Through systematic random sampling, the study subject in each department were selected as follows: The total number of students in each department served as the sampling frame (N) and the required number of study subjects calculated to be recruited per department (n)

Sampling interval was calculated as =N/n.

The first study subject in each department was picked via simple random sampling by picking a number via balloting between 1 and the calculated sampling interval i.e. (5). Thereafter, very 5^{th} study subject was selected until the desired number were recruited to participate in the study.

Data collection and analysis

Data was collected using a semi-structured interviewer-administered pretested electronic questionnaire which were designed on open data kit (ODK) which was used to obtain relevant information from the study participants, and the prevalence of depression was determine using the Patient Health Questionnaire (PHQ-9). The questionnaire was adapted from previous studies on depression and factors associated with depression.[10, 14, 17, 18]. It was validated by giving it to a group of experts (consultants in the Department of Community health, psychiatrics in UDUTH). They assessed each question using the Likert scale, which is

1- Not relevant
2- Somewhat relevant
3- Quite relevant
4- Highly relevant

Ratings of options 3 and 4 are acceptable and a question that has more than 75% of the two ratings were acceptable. The content validity index item and content validity index scale were computed. The internal consistency was determined by calculating the Cronbach's alpha (a value of 0.7 indicates that the instrument is reliable). The research instrument was pre-tested among undergraduate of other faculties to check the feasibility of use of the instrument for the study and to familiarize the researchers with the instrument it contained the following sections-

a) Section A: Sociodemographic characteristic;
b) Section B: prevalence of depression
c) Section C: factors associated with depression

The Patient Health Questionnaire (PHQ-9): Not at all = 0; Several days = 1; More than half the days = 2; Nearly every day = 3

The PHQ-9 scores each of the nine DSM-IV criteria as "0" (not at all) to "3" (nearly every day). For each of the nine criteria, respondents are expected to read every detail of the alternatives and to circle the one which applies to them. Depending on the total scores obtained, respondents are assigned into five categories of depression severity: 0–4 none, 5–9 mild depression, 10–14 moderate depression, 15–19 moderately severe depression, and 20–27 severe depression.[18] They are further categorized into those with depression and those without depression.

Data were exported from ODK and entered into the computer for analysis using IBM SPSS version 25. Continuous variables were summarized as mean and standard deviation, whereas categorical variables were summarized as frequencies and percentages. Inferential statistical analysis was done where necessary, using chi square test and logistic regression. Level of statistical significance was set at 5% ($p<0.05$)

Ethical consideration

Ethical approval was obtained from the research and Ethics committee of Usmanu Danfodiyo University Sokoto and consent was obtained from each study subject before questionnaire administration. Include the e

RESULTS

Out of the 363 questionnaires administered 355 were adequately completed giving a response rate of 97%.

Table 1: Socio-demographic characteristics of respondents.

VARIABLES	FREQUENCY (%) n = 355
Age(years)	
10-19	40(11.3)
20-29	301(85.0)
30-39	13(3.7)
Mean ±SD	23.39±3.44
Birth Order	
First	103(29.0)
Second	97(27.3)
Third	84(23.7)
Others	71(20.0)
Marital Status	
Single	329(92.7)
Married	25(7.0)
Separated	1(3.0)
Sex	
Male	229(64.5)
Female	126(35.5)
Family Type	
Monogamy	246(69.3)
Polygamy	102(28.7)
Others	7(2.0)
Religion	
Islam	298(83.9)
Christianity	50(14.1)
Others	7(2.0)
Ethnicity	
Hausa	200(56.3)
Yoruba	65(18.3)
Igbo	26(7.3)
Others	64(18.0)
Place of Residence	
Urban	252(71.0)
Rural	103(29.0)
Course Studying	
MBBS	124(34.9)
Medical Laboratory sciences	51(14.4)
Pharmacy	78(22.0)
Nursing	60(16.9)
Radiography	42(11.8)
Occupation of the Parents	
Civil servant	156(43.9)
Business man	105(29.6)
Farmer	52(14.6)
Others	42(11.8)

SD: standard deviation

The ages of the respondents ranged from 17-35 years with majority of them within the ages of 20-29years (85%). Most of the respondents were of the first birth order (29.0%) and single (92.7%). Majority of respondents were males (64.5%) and they came from a monogamous setting (69.3%). Majority of the respondents were Muslims (83.1%), Hausas by tribe(56.3%),andreside in Urban settings (71%), A larger proportion of respondents (34.9%) were MBBS students, and close to half of their parents (43.9%) were civil servants (Table 1).

Prevalence of depression among respondents

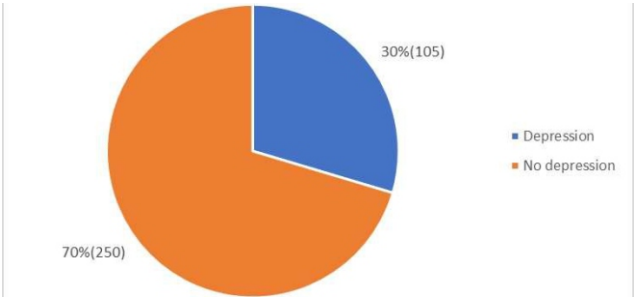

Figure 1: Prevalence of depression among respondents.

One hundred and five 105 (30%) of the 355 respondents had depression (Figure 1).

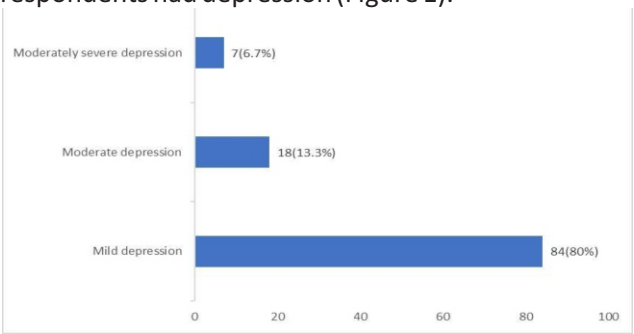

Figure 2: Pattern of depression among the respondents

Majority, 84 (80%) of the 105 respondents with depression had mild depression while about a fifth of them (21%) of them had moderate to severe depression (Figure 2).

Factors associated with depression among the respondents

Table3: Relationship between the respondents' sociodemographic characteristics and depression.

Variables	Depression n (%)	No depression n (%)	χ^2	P-value
Age				
10-19	10 (25.0)	30 (75.0)	0.471	0.790
20-29	91 (30.2)	210 (69.8)		
30-39	4 (28.6)	10 (71.4)		
Gender				
Male	75(32.8)	154 (67.2)	3.120	0.077
Female	30 (23.8)	96 (76.2)		

Birth order				
First	33 (32.0)	70(68.0)	2.251	0.522
Second	32 (33.0)	65 (67.0)		
Third	20 (23.8)	64(76.2)		
Others	20 (28.2)	51 (71.8)		
Marital status				
single	98(29.8)	231(70.2)	2.464^{+}	0.314
married	6(24.0)	19(76.0)		
separated	1(100)	0(0)		
Family type				
Monogamy	62(25.2)	184(74.8)	7.40^{+}	0.019*
Polygamy	40(39.2)	62(60.8)		
Others	3(42.9)	4(57.1)		
Religion				
Islam	93(31.2)	205(68.8)	4.067^{+}	0.147
Christianity	12(24)	38(76)		
Others	0(0)	7(100)		
Ethnicity				
Hausa	62(31.0)	138(69.0)	3.741	0.291
Yoruba	23(35.4)	42(64.6)		
Igbo	5(19.2)	21(80.8)		
Others	15(23.4)	49(76.6)		
Place of residence				
Rural	68(27.0)	184(73.0)	2.804	0.094
Urban	37(35.9)	66(64.1)		
0ccupation of parent				
Civil servant	48(30.8)	108(69.2)	2.848	0.416
Business	29(27.6)	76(72.4)		
Farmer	19(36.5)	33(63.5)		
Others	9(21.4)	33(78.6)		
Course of study				
MBBS	24(19.4)	100(80.6)	40.76	<0.001*
Pharmacy	40(51.3)	38(48.7)		
Nursing	8 (13.3)	52(86.7)		
MLS	12(23.5)	39(76.5)		
Radiography	21(50)	21(50)		

*Statistically significant, $^{+}$fishers exact

Depression was slightly more prevalent among the respondents that were aged 20-29 years (30.2%) as compared to those in the other age categories, but the difference was not statistically significant (^{2}= 0.471, p = 0.790) [Table 3]. Depression was more prevalent among males (32.8%) as compared to females (23.8%) but the difference was not statistically significant (^{2}= 3.120, p = 0.077) [Table 3]. Depression was significantly more prevalent among the respondent that were in a polygamous family type (39.2%) as compared to those that were in a monogamous family type (25.2%) (Fe^{2} =7.40, p = 0.019) [Table3]. Depression was significantly more prevalent among the respondents that were studying pharmacy (51.3%) as compared to those in other courses (^{2}=40.76, p<0.001) [Table 3].

Table4: Risk factors associated with depression among respondents.

Variables	Depression n (%)	No depression n (%)	χ^2	P value
Felt lonely due to living away from family				
YES	59(36.2)	104(63.8)	6.33	0.012*
NO	46(24)	146(76)		
Had an academic problem				
YES	42(53.2)	37(46.8)	27.14	<0.001*
NO	63(22.8)	213(77.2)		
Academic grade				
Distinction	9(22.5)	31(77.5)		
Credit	52(33.8)	102(66.2)	4.316	0,229
Pass	41(29.1)	100(70.9)		
Fail	3(15)	17(85)		
History of major life event				
YES	69(50.4)	68(49.6)	46.28	<0.001*
NO	36(16.5)	182(83.5)		
Engage in substance abuse				
YES	2(66.7)	1(33.3)	1.998	0.157
NO	103(29.3)	249(70.7)		
Engage in physical exercise				
NO	72(54.1)	61(45.9)	61.57	<0.001*
YES	33(14.9)	189(85.1)		
Offered course of choice				
YES	71(28.3)	180(71.7)	0.685	O.408
NO	34(32.7)	70(67.3)		
Place of residence during school				
On campus	67(26.4)	197(73.6)	4.388	0.036*
Off campus	38(37.6)	63(62.4)		
Punctuality to lectures				
100%	31(26.5)	86(73.5)	19.02	<0.001*
75%	59(27.2)	158(72.8)		
50%	11(68.8)	5(31.3)		
<50%	4(80)	1(20)		
Abuse of alcohol				
Yes	0(0)	2(100)	0.582^{+}	1.00
No	105(29.7)	248(70.3)		
Ever had a chronic illness				
Yes	15(51.7)	14(48.3)	7.436	0.006
No	90(27.6)	236(72.4)		
Had a family or social problem				
Yes	14(51.9)	13(48.1)	6.961	0.008
No	91(27.7)	237(72.3)		
Had no family support				
Yes	27(62.8)	16(37.2)	25.91	<0.001*
No	78(25)	234(75)		
Family history of psychiatric illness				
Yes	7(53.8)	6(46.2)	3.816	0.064
No	98(28.7)	244(71.3)		
Concern about future career				
Yes	39(52.7)	35(47.3)	24.002	<0.001*
No	66(23.5)	215(76.5)		

* Statistically significant, $^{+}$fishers exact

Depression was significantly more prevalent among the respondents that felt lonely due to living away from family, siblings or friends (36.2%) as compared to those that did not (^{2}=6.33, p=0.012) Depression was significantly less prevalent among the respondents who engaged in physical exercise (14.9%) as compared to those who did not (^{2}=61.57, p<0.001) [Table4]. Depression was more prevalent among respondents who had less than 50 percent punctuality to lectures (80%) as compared to others (^{2}=19.02, p<0.001) [Table4]. Depression was significantly more prevalent among the respondents that had no family support (62.8%) as compared to those who had family support (^{2}=25.91, p<0.001) [Table4].

Table 5: Predictors of depression among respondent's

Variables	aOR	95 % CI Lower - Upper	p – value
Punctuality to lectures (<50%versus 50%)	1.88	1.18 - 3.00	0.008
Having a family support (Yes versus No)	0.38	0.16 - 0.90	0.029
Engaging in physical exercise (Yes versus No)	0.17	0.09 - 0.31	<0.001

aOR Adjusted odds ratio; CI confidence interval

In multivariate logistic regression analysis, the predictors of depression among the respondents were <50% punctuality to lectures, not having a family support and not engaging in physical exercise. Having a family support and engaging in physical exercise were associated with 62% [Adjusted Odds Ratio (aOR): 0.38, 95% Confidence Interval (CI): 0.16 - 0.90, p = 0.029] and 83% [Adjusted Odds Ratio (aOR): 0.17, 95% Confidence Interval (CI): 0.09 - 0.31, p < 0.001], less likelihood of depression respectively; while being <50% punctual to lectures was associated with a 1.88-fold (aOR: 1.88, 95% CI: 1.18 – 3.0, p = 0.008) greater likelihood of having depression (Table 5).

DISCUSSION

This study assessed the prevalence and factors associated with depression among undergraduate health students, in Usmanu Danfodiyo University, Sokoto, Nigeria. The respondents in this study represent a relatively young population of students as majority of them (85%) were aged 20-29 years. This is not surprising as most undergraduate students in Nigeria fall within this age range. Majority of the respondents were Muslims (83.1%) and Hausas by tribe (56.3%), this high percentage of Muslims and Hausas in this study is a reflection of the study area, which predominantly comprised

The prevalence of depression was relatively high (30.0%) among the respondents in this study` with the most common pattern being mild depression (80%).This could be attributed to the fact that being medical students an enormous syllabus has to be covered in a limited time period, in addition to sudden change in their style of studying, thought of appearing or failing in exams, inadequate time allocated to clinical posting and backlog of academics.[19] It could also be related to their course of study as more than half of those depressed (51.3%) were studying pharmacy as a course, this finding is supported by a research carried out among 433 undergraduate pharmacy students in Pakistan, that showed a prevalence of 59.49% and 64% respectively among male and female students.[19-23,25].The findings in this study is similar to the prevalence rates obtained in a study conducted among medical students.

in Madinah (Saudi Arabia) which was (28.3%),[20] Cameroon (30%),[10] among the Students of a Medical College in Kerala (India) (31%)[18],the similarity may be due to the used of similar depression screening tool for the studies. while the prevalence is higher than the rates reported in a study among undergraduate medical students in Nigeria (23.3%)[11]and Malaysia (24.4%)[21] it is lower than studies conducted in Ethiopia(51.3%)[22] Karnataka, India (71%)[23] and Ahmadu Bello University (ABU), Zaria, Nigeria(58.2%)[4] this variation could be as a result of several factors which include; differences in the lengths of training programs, cost of studies, the use of different depression scoring tools and cultural differences around the world.[10]

In this study depression was found to be associated with a history of major life events as more than half of the respondents (50.4%) who had a major life event were depressed. This finding is supported by finding among medical students in Addis Ababa Ethiopia in which most of the respondents who had faced one or more of stressful life events (loss of close family or friends; financial crises or family problems) in the last 6 months were 1.61 times more likely to have depression as compared to those who had not faced stressful life events in the last 6 months.[22]

In this study depression was significantly more prevalent among the respondents that had no family support (62.8%) as compared to those who had family support. Studies have shown that individuals, who are satisfied with their social life and thus, a good social support have more resilience to stressors in life, hence acting as a life buffer and minimizing the risk of developing depression.[19] The finding of an association between not having a family support and depression in this study is further supported by previous studies that identified religiosity and social support as protective factors for depression among college students[24-26]

In this study depression was less prevalent among those who engaged in physical exercise (14.9%). The finding of a lower risk of depression among respondents who engaged in physical activity in this study is similar to the finding in a study in Mysuru City India where students without exercise were found to be depressed.[17]

Depression was associated with punctuality to lectures. In this study being <50% Punctual to lectures was associated with greater likelihood of having depression.This may be due to the stress associated

with missing of lectures in medical school as medical school requires a certain percentage of lectures before exam can be taken

CONCLUSION

This study showed high prevalence of depression among undergraduate Health Science Students in Usmanu Danfodiyo University, Sokoto, Nigeria, with about a fifth of them having moderate to severe depression. Whereas, depression was associated with the respondents' course of study, history of major life events, history of chronic illness, having a family or social problem**,** concern about future carrier, staying off campus, the predictors of depression among them were, not having family support, not engaging in regular physical exercise, and having less than 50% punctuality at lectures.

The Primary care physician in the health care facility of the University should routinely screen undergraduate health students for depression and the management of the University should provide adequate accommodation for them, and also promote healthy social lifestyles (such as participating in extracurricular activities, and engaging in regular physical exercise) among them.

Limitations to study

Some respondents were not willing to give all the information required to the researchers Efforts was however made to reduce this problem by assuring them of the confidentiality of all information provided and to explain to them the nature and purpose of the study.

Conflict of interest Statement

The authors have no conflict of interest to declare

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