

Depression, Anxiety and Stress levels among Optometry Students in the University of Benin Nigeria

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ABSTRACT

Background: Several studies have shown that University students experience high levels of mental health problems such as stress, anxiety and depression. The universal and increasingly competitive nature of higher education can exacerbate common academic stressors which contribute to mental health issues among University students. **Objective:** This study assessed the prevalence and possible correlates of depression, anxiety and stress among students in the Department of Optometry, University of Benin. **Method:** This cross-sectional descriptive study was conducted among 383 undergraduates. A convenience sample of Optometry students were interviewed using a questionnaire to record their socio-demographic data and their responses to the 21-question version of the Depression, Anxiety Stress Scale (DASS 21) questionnaire. The female respondents made up 57.4% (220) of the sample population. Age range for the sample was 18 to 33 years with a mean age of 25.48 (6±2.1 SD) years. **Results:** Prevalence of depression (40.2%), anxiety (51.2%) and stress (35.5%) of varying degrees was recorded. There was no significant difference in depression, anxiety or stress between genders ($p>0.05$). Living arrangements, academic performance, having to repeat a class, parents' marital status and family economic situation had positive association with depression, anxiety and stress. Statistical differences across these parameters were significant $p<0.05$. **Conclusion:** Results could be helpful in designing strategies for the early identification of mental health disorders, as well as psychological and other interventions that promote mental health and wellbeing among university students.

Keywords: Depression, anxiety, stress, mental health, students.

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Introduction

Mental health challenges are not new and have been around for a long time. Many people around the globe suffer from one form of mental illness or another¹. In Nigeria, one in four or 50 million people are suffering

from some sort of mental illness with depression, anxiety and stress disorders being more prevalent among all forms of mental illness and psychological distress². However, awareness of these issues has increased in recent years. With more incidents reported among university students than in the general population².

Depression as the name suggests, presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, poor concentration and tendency to commit suicide, which can be seen in anybody regardless of age, gender, race or socio-economic status³.

The transition into tertiary school has been reported to be associated with appetite disturbance, concentration problems and depression⁴. Academics are an integral part of the life of all college students and without a healthy attitude toward academic goals, students can be plagued with crippling bouts of stress⁵. Academic pressures of meeting grade requirements, taking tests, volume of material to be

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learned and time management have been shown to be a significant source of stress for students⁶.

While academics can be perceived as a positive challenge, potentially increasing learning capacity and competency, if viewed negatively, this stress can be detrimental to the student's mental health⁶. The universal and increasingly competitive nature of higher education has exacerbated common academic stressors which contribute to mental health issues among university students⁷. Studies^{8,9} have shown that stressors related to meeting institutional and socio-cultural expectations, maintaining study hours and fulfilling tuition costs were causes of concern for depression, anxiety and stress in university student population. Many colleges and universities have implemented counseling and/or programs on campus that are specifically designed to help combat and address the mental health issues of their students^{10,11}. Other studies^{12,13} have found correlation between low socioeconomic status and depression. University students with low socioeconomic status may be forced to compete for limited scholarship or take on an additional role in the workforce which increases their vulnerability to anxiety, stress or depression. This could lead to sleep deprivation or poor quality of sleep and worry.

Depression, anxiety and stress have been associated with poor academic performance¹⁴. Medical education has been reported to be demanding and stressful. Previously published studies^{15,16} indicated that medical students experienced various degrees of psychological morbidity such as stress, anxiety, and depression from the onset of medical training. The identified causes of these psychological distress among medical students include rigorous academic programs, frequent seminars and in-course assessments, and inability to socialize with other university students. No study has yet evaluated levels of depression, anxiety and stress among Optometry students. Hence, the purpose of this study is to report

levels of depression, anxiety and stress among Optometry students in the University of Benin.

Method

This was a cross-sectional descriptive study. It was conducted among undergraduate students from 200 level to 600 level in the Department of Optometry, University of Benin. A total of 400 questionnaires were given out but some were not well or completely filled and were thus invalidated, hence the final number of respondents in the study was 383 comprising males and females. Their age ranged from 18 To 33 Years.

The Questionnaire For This Study Comprised Of Two Sections. The First Part Outlined The Socio-Demographic Profile Of Respondents And The Second Part Comprised The 21- Question Version Of The Depression, Anxiety Stress Scale (DASS 21) Questionnaire. This Is A Self-Administered Three Sub-Scale Questionnaire That Is Used To Evaluate The Psychological Status Of An Individual.

The DASS21 Is A Widely Accepted Screening Tool That Was Introduced 27 Years Ago And Classifies The Respondent At normal, mild, moderate, severe or extremely severe range of depression, anxiety and stress independently. The 21 questions are divided into three sets of seven questions for depression, anxiety and stress per set. It consists of three self-report scales designed for the screening of depression, anxiety, and stress. Each of the three DASS21 scales contain seven elements, divided into subscales with similar content. The depression scale assesses discomfort, despair, life devaluation, self-devaluation, lack of interest/engagement, and inaction. The anxiety scale assesses autonomic arousal, signs of stress through skeletal muscle movements, stress-induced anxiety, and the subjective experience of anxiety. The stress scale is sensitive to chronic non-specific stimulation and evaluates the difficulty of relaxation, nervous agitation, upset/agitation, etc.

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Note: Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score.



Scores falling within mild, moderate, severe and extremely severe in each category were considered as depressed, anxious and stressed respectively while those that fell within normal were considered as not depressed, not anxious and not stressed.

The DASS-21 has been well accepted worldwide as a reliable and easy to use screening instrument. It is a modified and shorter version of the original version DASS-42 and it has been reported to have better psychometric properties than the DASS-42¹⁷. When completing the DASS-21 questionnaire, an individual is asked to indicate their experience of a given symptom on a 4-point Likert scale. The validity and reliability of the DASS-21 questionnaire in measuring depression, anxiety and stress symptoms among university students have been confirmed in many studies^{18,19}.

Ethical approval was obtained from the Ethical Committee of the Department of Optometry, University of Benin (REF.NO.LSC/OPT0003512). Informed consent was obtained from each participant and confidentiality assured. The study conformed to the tenets of the declaration of Helsinki.

Procedure

The well-structured self-administered questionnaires was shared among the respondents after proper explanation of the research work was given. Information on socio-demographic data consists of ten questions based on age, gender, ethnicity, living arrangements, academic performance, parental marital status and family economic situation. Students were asked to rate their family economic condition in broad terms of good, moderate or poor depending on availability of funds to meet basic family needs. This was because most students did not know the specific financial status of their parents in terms of earning power. The students were also asked if they had repeated a class previously to further assess academic performance. Students were asked if they currently smoked or not. Finally, the respondents were asked to describe their coffee intake on a 3-item Likert scale of 'Regularly' 'sometimes' and 'never'. The second section was the DASS-21 Questionnaire.

Data analysis

Socio-demographic data was presented using frequency distribution and percentages. Means and standard deviations were used to present scores of outcomes of each variable. One -way ANOVA and t-

tests were used to test the significant relationship between socio-demographic variables and means of depression, anxiety and stress scores. Level of significance was set at $p < 0.05$.

Results

Total of 400 questionnaires were handed out to participants. The copies returned were 385, of which two were incompletely filled. This gave a 95.75% response rate and brought the number of respondents in the study to 383 of which 57.4% (220) were females. The mean age of the respondents was 25.48 (± 6.2). Minority ethnic groups were more 62.9%. This is shown in table 1. Only 13.8% of the respondents had repeated a class. Majority (68.5%) of the respondents indicated that they were moderately satisfied with their academic performance. 40.6% of the respondents lived alone. About half (53.3%) of the respondents indicated that their parents were married. Respondents with poor family economic situation were 2.9%. Only 3.9% of the respondents were smokers. Very few (7.8%) of the respondents took coffee regularly (table 1).

Table 2 shows the prevalence of depression (40.2%), anxiety (51.2%) and stress (35.5%) of varying degrees among respondents. Normal levels for stress (64.5%), anxiety (48.8%) and depression (59.8%) were recorded.

Stress and depression scores were higher in females than in males while anxiety was higher in males. However, there was no significant difference ($p > 0.05$) in the levels of stress, anxiety and depression scores between gender. There was also no significant difference in the levels of depression, anxiety and stress scores among ethnic groups ($p > 0.05$), those who smoked ($p > 0.05$) or those who drank coffee (table 3).

Living arrangements, academic performance, having to repeat a class, parents' marital status and family economic situation had positive association with depression, anxiety and stress. Statistical differences across these parameters were significant $p < 0.05$ (table 3).



Table 1: Socio-demography of Respondents

		N	%
Gender	Female	220	57.4
	Male	163	42.6
Age	18 - 21 years	103	29.5
	22 - 25 years	240	68.8
	26 - 29 years	5	1.4
	30 - 33 years	1	0.3
Ethnicity	Igbo	93	24.3
	Yoruba	47	12.3
	Hausa	2	0.5
	Others	241	62.9
Living arrangements	Living with parents	89	23.5
	Living with Friends / in hostels	136	25.9
	Living Alone	154	40.6
Academic performance	Highly satisfied	73	19.4
	Moderately satisfied	257	68.5
	Least satisfied	46	12.2
Repeated a class	Yes	53	13.8
	No	330	86.2
Parents marital status	Married	204	53.3
	Separated/Divorced/Widowed	49	12.8
	Never Married	130	33.9
Family economic situation	Good	152	40.3
	Moderate/ Average	214	56.8
	Poor	11	2.9
Cigarette smoking	Yes	15	3.9
	No	368	96.1
Coffee intake	Regularly	30	7.8
	Sometimes	184	48.0
	Never	169	44.1

Table 2: Level of stress, anxiety and depression among Optometry students

	Stress		Anxiety		Depression	
	(N)	%	(N)	%	(N)	%
Normal	247	(64.5)	187	(48.8)	229	(59.8)
Mild	56	(14.6)	35	(9.2)	45	(11.7)
Moderate	39	(10.2)	99	(25.8)	63	(16.5)
Severe	34	(8.9)	28	(7.3)	21	(5.5)
Extremely Severe	7	(1.8)	34	(8.9)	25	(6.5)



Table 3: Socio-Demographic correlation to Stress, Anxiety and Depression

Socio-demography		Stress M±SD	Anxiety M±SD	Depression M±SD
Gender	Female	3.65±0.87	3.36±1.02	3.49±0.97
	Male	3.63±0.95	3.37±1.08	3.42±1.02
P value		0.80	0.89	0.54
Age	18 - 21 years	3.71±0.84	3.41±1.05	3.60±0.84
	22 - 25 years	3.58±0.96	3.33±1.06	3.42±1.02
	26 -29 years	4.20±0.45	2.80±1.30	2.40±1.52
	30 -33 years	3.00±0	4.00±0	3.00±0
P value		0.26	0.54	0.06
Ethnicity	Igbo	3.60±0.95	3.18±1.14	3.48±1.06
	Yoruba	3.55±0.88	3.38±0.95	3.21±0.91
	Hausa	4.00±0.00	4.00±0.00	3.50±0.71
	Others	3.67±0.89	3.43±1.03	3.50±0.98
P value		0.77	0.22	0.35
Living arrangements	Living with parents	3.71±0.91	3.31±1.15	3.52±1.05
	Living with Friends / in hostels	3.63±0.84	3.45±0.94	3.51±0.94
	Living Alone	4.60±0.95	4.33±1.07	4.38±1.07
P value		0.00	0.00	0.00
Academic Performance	Highly satisfied	3.68±0.97	3.16±1.17	3.48±1.14
	Moderately satisfied	3.63±0.91	3.46±0.12	3.42±0.97
	Least satisfied	4.61±0.80	5.22±1.01	4.65±0.32
P value		0.00	0.01	0.04
Repeated a class	Yes	4.53±0.93	4.30±1.07	4.23±1.10
	No	3.66±0.90	3.38±1.05	3.50±0.97
P value		0.03	0.00	0.01
Parents marital status	Married	3.64±0.89	3.43±1.06	3.45±1.01
	Separated/Divorced/Widowed	4.65±0.97	4.27±1.10	4.29±1.06
	Never Married	3.64±0.90	3.27±1.10	3.54±0.94
P value		0.01	0.04	0.01
Family economic situation	Good	3.57±0.99	3.33±1.09	3.45±1.03
	Moderate/ Average	3.68±0.84	3.27±1.91	3.48±0.98
	Poor	4.91±0.83	4.36±1.05	4.36±0.92
P value		0.03	0.00	0.01
Cigarette smoking	Yes	3.47±0.99	3.40±1.21	3.33±0.98
	No	3.65±0.90	3.36±1.05	3.47±0.99
P value		0.83	0.44	0.22
Coffee intake	Regularly	3.67±0.88	3.07±0.94	3.10±1.06
	Sometimes	3.59±0.93	3.31±1.06	3.49±0.96
	Never	3.69±0.87	3.48±1.04	3.49±1.01
P value		0.54	0.08	0.12

Discussion

A good number of students in this study showed normal levels for depression, anxiety and stress (59.8%, 48.8% and 64.5% respectively). This agrees with the study by Mahmoud et al²², where they investigated the prevalence of depression, anxiety and

stress among youths at the time of COVID-19. They found prevalence of depression at normal levels to be 55%, anxiety at normal levels to be 58% and stress at normal levels to 51%. Another study by Lamidi²³ in Ile-Ife, Nigeria, found out that the majority of



Oduduwa University students showed a normal level for depression, anxiety and stress 37.4%, 32.2%, and 72.2% respectively. Majority of the students that showed normal levels for depression, anxiety and stress may have been due to the fact that the questionnaires used were based on self-reported measures and students may have reported imprecise reports which may have affected the accuracy of the information provided. Another study in Nigeria by Aluh et al²⁴ showed a higher prevalence for depression, anxiety and stress but this could be due to the fact that a different questionnaire (Patient Health questionnaire, PHQ-9) was used and also that the research was based on an online study which might have given room for more students to be reached as compared to sharing questionnaires manually as it was done in this study.

This study revealed that quite a substantial proportion of Optometry students in University of Benin suffered from mild level of stress and moderate levels of anxiety and depression. This agrees with the study of Beiter *et al*⁴, where they investigated the prevalence and correlates of depression, anxiety and stress in a sample of college students and reported that it was expedient that colleges continually evaluate the mental health of their students and also design treatment programs specifically to target their needs. The proportion of students which the study reported suffered from some form of mild, moderate and severe levels of depression. The fact that the study was done some few weeks before an examination should be borne in mind, as it is believed that students tend to suffer from some form of anxiety and stress majorly during this period in their academic career.

This current study assessed the correlate of depression, anxiety and stress with demographic factors among students of Optometry department in University of Benin and found that, overall prevalence of depression, anxiety and stress did not seem to be different between gender. On the contrary, a study in Ethiopia reported that female students have higher scores for depression, anxiety and stress.

Results from this study did not show any association between ethnicity and levels of depression, anxiety or stress. There was however, positive association with students who had repeated a class and those not satisfied with their academic performance. Lamidi²³ in their study found a significant relationship between academic performance and depression, anxiety and stress. Although, Teh *et al.*²⁵ in their study found no

relationship between academic performance and depression, anxiety and stress, this study showed a strong association between depression and academic performance. Depression, anxiety and stress level were higher among students who were least satisfied with their academic performance and those who had repeated a class previously. This showed significant relationship respectively. This is contrary to the study by Aluh et al²⁴ where they investigated the prevalence and correlates of depression, anxiety and stress among undergraduate pharmacy students, they reported that students who had not repeated a class presented with high scores for depression, anxiety and stress. Higher depression scores among students who were moderately satisfied with their academic performances may be due to worry and anxiety about failing their courses, believing failure will result in humiliation or rejection. Another reason why the scores for depression is higher in students with moderately satisfied academic performance could be due to the fact that such students may not have been admitted into their first choice of study, this may have created some form of rejection which can affect academic performance and also having an impact in depressive symptoms as seen in such students²⁶.

This study reported no significant difference in depression, anxiety and stress with intake of coffee or with cigarette smoking among the students. University students had cited stress as one of the reasons why they take caffeine²⁵. It is worthy of note that students usually take coffee to stay awake while reading. Respondents in this study who opted for coffee may have taken this substance for same reason. Conversely, another study²⁶ stated that low level of caffeine intake has been shown to positively reinforce mood and performance.

Studies^{27,28} have shown that some students admitted to smoking as self-medication to ease feelings of stress. Nicotine is a major constituent of tobacco which creates an immediate sense of relaxation²⁹. This study did not show significant level of depression, anxiety and stress scores for those who smoked cigarette and this contradicts the study done by Aluh et al²⁴ where they found that the level of depression, anxiety and stress were higher among smokers. This contradiction is unexpected as it is a common belief that smoking helps relieves stress and anxiety. But some researches have shown that smoking has a huge impact among smokers in increasing anxiety and stress as compared to non-smokers, this may be due to the fact that



Nicotine creates a temporary sense of relaxation making people smoke in the belief that it helps in reducing stress and anxiety. This is in agreement with Sharma and Sharma³⁰

Students who lived alone presented with higher depression, anxiety and stress scores compared to those living with their parents or with others. This solidifies the fact that living arrangement is an important factor to take into cognizance when measuring depression, anxiety and stress among university students. This result contrasts with the study of Beiter *et al.*,⁴ where they investigated the prevalence and correlates of depression, anxiety and stress in a sample of college students and found higher depression and anxiety scores in students that live in the dormitory compared to those that lived off campus. Most Nigerian universities, however, have serious accommodation problems. In some Nigerian universities, an average of six to eight persons reside per room in the University's halls of residence. In the University of Benin, the average is about six students per room, depending on the hostel. This is because about 40% of students in the halls of residence are unofficially squatting with their fellow students. This could make living conditions within the University hostel as stressful on the one hand but also provide some form of community for students to interact socially, on the other hand.

The result of this study showed that students from families with poor economic situation have higher scores for depression, anxiety and stress. For many students, going into the university might be the first time that they would be going away from home and become responsible for the management of their everyday living expenses, such as food, clothing, rent and other miscellaneous bills. Making decision as to what to eat or buy can induce stress, anxiety and depression in them. Students with poor family economic condition might not be able to afford well-balanced meals in school. Also, sustainability in school many times solely lies on the sponsor of the student. This agrees with the study by Leveto³¹. The enormous stress that financial responsibility placed on university students showed that financial responsibility classes that teach students how to formulate a budget and save money, among other useful financial skills, may serve to reduce stress levels in university students. Findings from this study is contrary to the study by Ahmed *et al.*³² where students with a low income were less likely to be depressed as

compared to those with a higher income. This may be due to the environment where the study was carried out, as it was gathered from the study that the Ethiopian University Tuition fee (meal, education and dormitory) can be paid after the students graduated and got a job. This will make the University a better settling environment for low-income students.

This study is not without limitations. These limitations include the possible response bias due to the use of a self-report survey. The DASS-21 is a self-report instrument which could lead to bias or under-reporting. The generalizability of the results of this study should be limited. Also, the fact that only a few demographic factors and psycho-social variables were examined. Another factor to be considered is the use of a homogeneous convenient sample of Optometry students from one university. The psycho-socio-economic conditions of one Optometry school in Benin cannot be compared to other Optometry schools in Nigeria. Nonetheless, it is suggested that large prospective multi-centered studies be carried out to identify and intervene in issues of psychological distress in Optometry schools.

Conclusion

In conclusion, depression, anxiety and stress can have a high detrimental effect on individual and society, this can lead to negative outcomes including school dropouts, increased suicidal tendency, relationship and marital problems, impaired ability to work effectively or burnout. With this in mind, there is a need for greater attention to the psychological wellbeing of undergraduate students to improve their quality of life. With no prior study on the mental health and psychological wellbeing of Optometry students, this study contributes to the understanding of specific factors that affect depression, anxiety and stress in the study population. The study results could be helpful in designing strategies for the early identification of mental health disorders, as well as psychological and other interventions that promote mental health promotion and wellbeing among university students.

Conflict of interest: None

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