ORIGINAL RESEARCH

A COMPARATIVE STUDY OF THE PREVALENCE OF DEPRESSION AMONG CLINICAL MEDICAL STUDENTS IN A PRIVATE AND PUBLIC UNIVERSITY IN PLATEAU STATE, NORTH CENTRAL NIGERIA

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Abstract

Background: Depression is a growing concern among medical students, driven by factors such as financial stress, academic pressures, and the intensity of medical training. It is associated with adverse outcomes, including poor academic performance, higher dropout rates, and suicide. Differences in educational environments between private and public universities may influence the prevalence and determinants of depression. This study aimed to compare the prevalence of depression and its associated factors among clinical medical students in private and public universities in Plateau State, Nigeria.

Methods: A comparative cross-sectional study was conducted among 208 clinical medical students from private and public universities, selected through multistage sampling. Significant depression was assessed using the Patient Health Questionnaire (PHQ-9), with a score ≥10 indicating moderate to severe depression. Data were analysed using Epi Info 3.5.4, with chi-square tests applied to socio-demographic variables, and statistical significance set at $p \leq 0.05$.

Results: The mean age of participants was 23.5 ± 2.35 years for private university students and 24.8 ± 3 years for public university students. Depression prevalence was 22.5% in private universities and 16.5% in public universities, though this difference was not statistically significant. Significant level of depression was more common among students aged 20–23 years and 4th-year clinical students.

Conclusion: Addressing mental health among medical students requires targeted interventions, including mental health programs, financial support, and counselling services. Such efforts are vital in mitigating the long-term impacts of depression in this population.

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INTRODUCTION

Depression is a growing global health burden that causes significant mental, social, economic, and physical suffering for those affected. It is a common mood disorder, characterized by persistent sadness and a loss of interest in activities once enjoyed. Other symptoms include feelings of guilt, low self-worth, disturbed sleep or appetite, fatigue, poor concentration, and psychomotor agitation or retardation. Depression can be recurrent or persistent, significantly impairing one's ability to function at work, school, or in daily life. In severe cases, it may lead to suicidal ideation, suicide attempts, and suicide. While mild depression can often be managed without medication, moderate to severe cases typically require a combination of pharmacological treatment and psychological therapy.[1, 2]

Globally, depression affects approximately 280 million people, with a prevalence of 10–14% in developing countries. A study conducted in Nigeria, reported a prevalence of 3.1% for major depressive disorder.[1, 3]

Mental health disorders, particularly depression, have become a significant concern among medical students worldwide. A systematic review and meta-analysis found that 27.2% of medical students globally suffer from depression.[4.] In Nigeria, a study examining the prevalence of depression among medical students in the southeastern part of the country found a high rate of 23.3%.[5] Medical students face immense academic pressure, which can lead to considerable psychological stress and increase the risk of depression, as well as other mental health issues like anxiety. Contributing factors include the demanding medical curriculum, financial pressures related to tuition, and high burnout rates. In addition to academic stress, non-academic risk factors for depression include family relationship problems, female gender, a family history of depression, and lifestyle changes such as substance abuse and smoking.[5, 6]

In Nigeria and other low- and middle-income countries, medical students also face socio-economic challenges such as poverty and insecurity. The psychological stress experienced during medical training has been shown to negatively affect medical graduates' performance as healthcare providers, leading to poor patient care and unprofessional conduct.[7]

Universities, both public and private, provide higher education, with medical students training in both types of institutions. Public universities, also known as state or federal universities, are government-funded, while private universities are funded by individuals, groups, or organizations. A key distinction between these institutions lies in the cost of education and the quality of services provided. These differences may contribute to variations in the prevalence of depression among medical students in these settings.[8]

This study aimed to investigate the prevalence and determinants of depression among clinical medical students at public and private universities in Plateau State, using the Patient Health Questionnaire (PHQ-9).

MATERIALS & METHODS

Study design, Sampling, Setting and Participants

This study was a comparative cross-sectional study conducted among clinical medical students at both a private and a public university in Plateau State. The sample size was calculated using Fischer's formula for a comparative cross-sectional study, as follows:

$$n = \frac{(Z\alpha + Z\beta)^2 2pq}{d^2}$$

Where;

n = desired sample size

Zα = normal standard deviation at 95% confidence interval = 1.96

Z_β = power of the study 0.84

p = proportion of variable being measured of similar population

q = complementary probability (1 - p)

d = expected difference = P1 – P2

Using values from a reference study[5]

P1 = prevalence of depressive symptoms among medical students in a public Nigerian medical school = 0.27[8]

Based on these values, the minimum required sample size was determined to be 190. A multi-stage sampling technique was used to select the participants:

Stage 1: Selection of Institutions

The College of Health Sciences at Bingham University, Jos (a private university), and the University of Jos (a public university) were purposively selected, as they are the only institutions in Plateau State offering a program in medicine and surgery.

Stage 2: Selection of Participants

Clinical medical students were stratified by class year: 4th, 5th, and 6th year. The number of respondents to be selected from each class year was determined using a proportionate allocation method. The sampling frame consisted of the class list for each year. Respondents were then randomly selected from each class using simple random sampling.

For the private university, the number of students in each class year was as follows:

4th year: 85 students

5th year: 185 students

6th year: 100 students

The sample sizes for each year were proportionately allocated as: 24, 53, and 28, respectively.

For the public university, the distribution was:

4th year: 152 students

5th year: 165 students

6th year (final year): 273 students

The proportionate sample sizes were: 27, 30, and 48, respectively.

Study Instruments

A self-administered questionnaire comprised of three sections was used. The sections are as follows:

Socio-demographic data- This section gathered information on age, gender, religion and ethnicity, year of study, average income, and marital status.

The Patient Health Questionnaire (PHQ-9) - The PHQ-9 is the self-administered version of the PRIME-MD diagnostic instrument for common mental disorders. It is a validated tool used for screening, diagnosing, monitoring and measuring the severity of depression. The questionnaire consists of 9 items, each rated on a scale from 0 to 3, indicating the frequency of symptoms**:** '0' (not at all), '1' (several days), '2' (more than half the days) or '3' (nearly every day).[9, 10]

Depression severity is categorized based on the total score: 0 none, 1-4 minimal, 5-9 mild, 10-14 moderate, 15-19 moderately severe, and 20-27 severe. PHQ-9 score ≥10 has a sensitivity of 88% and a specificity of 88% for detecting major depression.[10] The severity of depression was classified into significant and insignificant levels as follows:

0-9 (Insignificant level of depression—including no, minimal, and mild depression)

10-27 (Significant level of depression—includes moderate and severe depression)

This classification is based on clinical practice, where treatment is typically initiated for moderate or severe depression, while mild depression may be managed with counselling and lifestyle modifications.[11]

Factors Associated with Depression - This section collected information on various factors potentially linked to depression, including past history of depression, major life events, substance use, parental disharmony, tuition burden, relationship burden, burden of the programme, and presence of chronic illnesses (Diabetes, sickle cell anaemia, hypertension, asthma).

ETHICAL CONSIDERATIONS

Ethical clearance was obtained from the JUTH Human Research and Ethics Committee. Informed consent was obtained both verbally and in writing from all participants before data collection. Participants were assured that their data would be used solely for the purposes of the study and that confidentiality would be strictly maintained.

DATA ANALYSIS

Data was cleaned using Microsoft Excel and analysed using Epi Info v3.5.4 statistical software. Quantitative variables, such as age, were summarized using the mean and standard deviation. Qualitative variables, such as depression levels and associated factors, were summarized using tables and charts. The Chi-square test was used to determine factors associated with depression, including age, gender, class year, financial instability, academic performance, traumatic experiences, and workload. A p-value ≤ 0.05 was considered statistically significant. Results were presented in tables.

RESULTS

A total of 208 participants (response rate: 99%) completed the study, with a mean age of 23.5 ± 2.35 years for the private university students and 24.8 ± 3.0 years for the public university students. Students from all clinical years participated in the study.

Table II: Severity of depression among clinical medical students in both Private and Public Universities

Depression	**Private**	**Public**	X^2	***df***	***p* value**
Minimal	35(40.7%)	42(45.7%)			
Mild	28(32.6%)	33(35.9%)			
Moderate	14(16.3%)	11(12.0%)	3.3506	4	0.501
Moderately Severe	6(0.07%)	2(0.02%)			
Severe	3(0.03%)	4(0.04%)			
Total	**86**	**92**			

Table I: Socio-demographic characteristics of clinical medical students in both Private and Public Universities

Factors	Significant Level (n=23)	Insignificant Level (n=79)	X^2	*df*	*p* value
Age (years)					
< Mean Age of 24	19(33.9%)	37(66.1%)	*9.2072*	*1*	***0.002***
≥ Mean Age of 24	4(8.7%)	42(91.3%)			
Gender					
Female	11(19.3%)	46(80.7%)	0.7818	*1*	0.377
Male	12(26.7%)	33(73.3%)			
Class Year/Level					
4th	12(50.0%)	12(50.0%)	*13.9151*	*2*	*0.001*
5th	8(16.3%)	41(83.7%)			
6th	3(10.3%)	26(89.7%)			
Past History of Depression					
Yes	10(38.5%)	16(61.5%)	*5.0592*	*1*	***0.025***
No	13(17.1%)	63(82.9%)			
Major Life Events					0.233
Yes	11(2.9%)	27(71.1%)	1.4197	*1*	
No	12(18.8%)	52(81.3%)			
Substance Use					
Yes	1(20%)	4(80.0%)	0.0230	*1*	0.81
No	22(22.9%)	74(77.1%)			
Parental Disharmony					0.267
Yes	2(33.3%)	4(66.7%)	0.4245	*1*	
No	21(21.9%)	75(78.1%)			
Tuition Burden					
Yes	11(34.4%)	21(65.6%)	*3.7340*	*1*	*0.053*
No	12(17.1%)	58(82.9%)			
Overburdened by lectures					
Yes	18(29.5%)	43(70.5%)	*4.2083*	*1*	***0.040***
No	5(12.2%)	36(87.8%)			
Relationship Burden					0.057
Yes	8(38.1%)	13(61.9%)	3.6596	*1*	
No	15(18.5%)	66(81.5%)			
Chronic Illness					
Yes	4(36.4%)	7(63.6%)	1.2966	*1*	0.217
No	19(21.1%)	71(78.9%)			

Table IV: Factors associated with significant level of depression among clinical medical students in Public University

Factors	Significant level (n=17)	Insignificant level (n=86)	X^2	df	p value
Age (years)					
<25	13(19.1%)	55(80.9%)	*0.9913*	*1*	*0.319*
≥25	4(11.4%)	31(88.6%)			
Gender			*0.0950*	*1*	*0.758*
Female	7(17.9%)	32(82.1%)			
Male	10(15.6%)	54(84.4%)			
Class Year			*0.4581*	*2*	*0.795*
400	5(20.8%)	19(79.2%)			
500	5(16.1%)	26(83.9%)			
600	7(14.6%)	41(85.4%)			
Past History of Depression					
Yes	8(28.6%)	20(71.4%)	*4.0628*	*1*	***0.047***
No	9(12.0%)	66(88.0%)			
Major Life Events			*0.7902*	*1*	*0.374*
Yes	9(19.1%)	38(80.9%)			
No	7(12.7%)	48(87.3%)			
Substance Use			*1.0362*	*1*	*0.262*
Yes	3(27.3%)	8(72.7%)			
No	14(15.2%)	78(84.8%)			
Parental Disharmony			*0.4542*	*1*	*0.393*
Yes	2(25%)	6(75.0%)			
No	15(15.8%)	80(84.2%)			
Tuition Burden			*0.1407*	*1*	*0.475*
Yes	3(20%)	12(80%)			
No	14(16.1%)	73(83.9%)			
Overburdened by lectures					
Yes	15(24.2%)	47(75.8%)	*6.6816*	*1*	***0.010***
No	2(4.9%)	39(95.1%)			
Relationship Burden			*4.5486*	*1*	***0.033***
Yes	9(28.1%)	23(71.9%)			
No	8(11.3%)	63(88.7%)			
Medical condition present			*11.633*	*1*	***0.006***
Yes	4(66.7%)	2(33.3%)			
No	13(13.4%)	84(86.6%)			

DISCUSSION

This study aimed to compare the prevalence of depression and its determinants among clinical medical students in private and public universities in Plateau State using the PHQ-9 (score ≥10). We found that 16.7% of students at the University of Jos (public university) had significant levels of depression. This prevalence is similar to that reported at Bayero University, Kano (15.1%),[12] though the latter used the Mini-International Neuropsychiatric Interview (MINI) rather than the PHQ-9. Our findings are lower than the 23.3% prevalence observed at the University of Nigeria, Enugu (23.3%),[5] which used the Zung Self-Rating Depression Scale. A higher prevalence of 32.0% was found at the University of Benin, Nigeria, also using the PHQ-9.[13] These discrepancies may stem from differences in sample populations, regions, and study methodologies.

Similarly, at Bingham University (a private university), the prevalence of depression was higher at 22.5%. This is comparable to the 25.8% prevalence reported in a study conducted at Babcock University (also private) in South-western Nigeria, where 16% of participants had moderate depression and 9.8% had severe depression.

Although the prevalence of depression at Bingham University (a private university) is higher than that at the University of Jos (public university), it was not statistically significant.

As shown in Table III, age was a significant factor associated with depression at the private university, with higher prevalence among students aged 20–23 years compared to those aged 24–39 years. A similar trend was observed at the public university, though it was not statistically significant. Younger students often struggle more with academic stress and life challenges. Previous studies have indicated that older students typically develop better stress-coping strategies and problem-solving approaches.[14]

Although female gender is generally associated with a higher likelihood of developing depression, no significant gender-related differences were found in either the private or public university. Interestingly, in the private institution, male students had a higher prevalence of significant depression, while in the public institution; female students had a higher prevalence. This finding aligns with other studies conducted in Nigeria and India.[5, 15]

In both institutions, the prevalence of significant depression decreased as students progressed through their medical training. The highest prevalence was found in 4th-year students, with lower rates in the 5th and 6th years. Similar trends have been reported in studies conducted in Nigerian public institutions, as well as in private institutions in India and Pakistan, where depression rates decreased with each advancing year of study.[16] This may be partly explained by age differences, as 4th-year students tend to be younger, and the transition to clinical training may pose additional challenges. As students adjust to the demands of clinical training, proper institutional guidance could help mitigate its impact on mental health. Our study found a statistically significant relationship between class year and depression prevalence at the private university but not at the public university, possibly because 4th-year students at the private institution were preparing for their MBBS examinations at the time.

A history of previous depression was significantly associated with current depression levels in both private and public institutions. Given that depression is often recurrent, this finding is consistent with other studies that show up significant percentage of individuals who have recovered from an episode of depression may experience recurrence.[17]

Both private and public university students who reported feeling burdened by lectures showed a significantly higher prevalence of depression than those who did not. Previous studies have demonstrated that heavy workloads can contribute to depression, particularly when students lack time for relaxation or breaks.[18]

Students who reported relationship burdens, such as conflicts with friends or intimate partners, had a higher prevalence of depression, especially among public university students. Relationship problems are widely recognized as a leading cause of depression in young people, with some even attempting suicide.[1]

In the public institution, students with chronic illnesses (e.g., peptic ulcer disease, diabetes, etc.) were significantly more likely to experience depression. This may be linked to the socio-economic challenges faced by many public university students, making it difficult for them to manage both academic pressures and their health conditions effectively.

No significant associations were found between depression and socioeconomic factors such as financial status, parental disharmony, or substance use. However, previous research has shown that substance use and family conflict are often associated with depression.[19]

Given the concerning prevalence of depression among clinical students, various interventions should be considered. These could include increasing exposure to green spaces, promoting physical activity, and offering peer-group psychotherapy, which is a low-cost and culturally sensitive approach to alleviating depression. Further research exploring the effects of the learning environment on students' mental health would be valuable in guiding future interventions. Addressing mental health is essential, as a depressed student is less likely to perform well academically and develop into a competent healthcare provider.[20, 21]

CONCLUSION

The prevalence of significant depression was found to be 16.5% at the public university and 22.5% at the private university, though the difference was not statistically significant. Factors associated with depression included age, class year, a history of depression, and lecture burden at the private university, and a previous history of depression, lecture burden, chronic illness, and relationship stress at the public university.

Conflicts of Interest: None

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