

Original Article

Assessment of Perceived Stress level among undergraduates in a Nigerian University and its relationship with academic performance, Depression, Anxiety and Suicidal Behavior

Adebayo KO<sup>1</sup>, Mosanya JT<sup>2</sup>, Oshingbesan M<sup>3</sup>, Ibrahim KA<sup>4</sup>, Buhari OIN<sup>5</sup>, Nuhu FT<sup>6</sup>, Ajayi AO<sup>7</sup>, \*Akpata OE<sup>8</sup>, Falade J<sup>9</sup>

<sup>1</sup>Department of Psychiatry, Osun State University, Osogbo, Osun State, Nigeria.

<sup>2</sup>Department of Psychiatry, UNIOSUN Teaching Hospital, Osogbo, Osun State, Nigeria

<sup>3</sup>Norfolk and Suffolk NHS Foundation Trust, Mariner House, 43 Handford Road, Ipswich, IP1 2GA.

<sup>4</sup>Department of Psychiatry Osun state University Teaching Hospital, Osogbo, Osun State, Nigeria

<sup>5</sup>Department of Behaviour science, University of Ilorin, Kwara, Nigeria.

<sup>6</sup>Federal Neuro-Psychiatric Hospital, Barnawa Kaduna, Nigeria

<sup>7</sup>Department of Psychiatry, Osun State University, Osogbo, Osun State, Nigeria.

<sup>8</sup>Department of Anatomy, College of Medicine and Allied Health, Wesley University Ondo, Nigeria.

<sup>9</sup>Department of Mental Health, University of medical sciences, Ondo City, Nigeria.

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\*Correspondence: Oluwaseun E. Akpata

Email: [Oluwaseun.akpata@wesleyuni.edu.ng](mailto:Oluwaseun.akpata@wesleyuni.edu.ng)

ABSTRACT

Stress fundamentally shapes the academic outcomes and psychological well-being of undergraduates, yet empirical data regarding its relationship with anxiety, depression, and suicidal behavior among Nigerian university students remains sparse. To address this gap, a descriptive cross-sectional study was conducted to assess perceived stress levels and evaluate these psychological connections among 500 undergraduates at Osun State University in Osogbo, Nigeria. Participants were selected via stratified random sampling, and data were gathered using the Perceived Stress Scale (PSS-10), Hospital Anxiety and Depression Scale (HADS), and Suicidal Behaviours Questionnaire-Revised (SBQ-R). Statistical analyses, including chi-square tests and logistic regression, were executed using SPSS version 21 with significance set at  $p < 0.05$ . The findings revealed that 69.9% of the students experienced moderate to high stress. Furthermore, 59.8% exhibited abnormal depressive symptoms, 9.9% suffered from clinically significant anxiety, and 17.7% reported strong suicidal tendencies. Perceived stress was significantly associated with gender and academic achievement ( $p = 0.011$ ), with higher stress levels disproportionately affecting females (91.1%) and students maintaining lower CGPAs between 2.0 and 2.99 (100%). Elevated stress displayed a positive correlation with depression, anxiety, and suicidal behavior ( $p < 0.001$ ). Logistic regression models demonstrated that being male reduced the likelihood of experiencing high stress (OR = 0.012; 95% CI: 0.003–0.041), whereas enrollment in health-related courses (OR = 31.317; 95% CI: 9.119–107.552) and younger age (OR = 0.884; 95% CI: 0.788–0.991) emerged as significant predictors of heightened stress. Ultimately, a substantial proportion of these undergraduates experience severe stress that is intimately linked to depressive symptoms, anxiety, and suicidal ideation, highlighting an urgent need for tailored, gender-responsive, and faculty-specific mental health interventions.

**Keywords:** Anxiety, Depression, Nigeria, Perceived Stress, Suicidal Behavior, Undergraduate

INTRODUCTION

Perceived stress defined as the individual's assessment that life demands exceed personal coping resources has gained increasing attention as a critical factor influencing university students' academic performance and psychological well-being<sup>1</sup>. In Nigeria,

undergraduates are confronted with multiple sources of stress, such as heavy academic workloads, financial constraints, unstable learning environments, and limited emotional support<sup>2</sup>. These pressures often manifest in reduced motivation, poor concentration, and academic underachievement.

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The Nigerian university system has documented the negative implications of stress on learning outcomes. For instance, a study revealed moderate negative correlations between perceived stress, test anxiety, and academic achievement respectively<sup>1</sup>. Similarly, Asiegbu EC et al, 2023 reported that students who experienced long lecture hours, poorly spaced examination timetables, and financial strain performed worse academically compared to their less-stressed peers. These findings underscore how academic stress not only undermines performance but may also compromise students' emotional health<sup>4</sup>.

Evidence further suggests that elevated perceived stress often co-occurs with depressive symptoms among undergraduates. Although large-scale Nigerian studies directly linking stress and depression remain limited, Joseph DT, et al, 2024, found that nearly 45% of engineering students across Nigerian universities perceived their academic stress as "extremely stressful," with many reporting severe disruptions in mood and daily functioning consistent with depressive features<sup>2</sup>. Anxiety, another common correlate of stress, has been shown to mediate the relationship between academic pressure and performance. Ballah GA reported that higher test anxiety significantly predicted lower academic achievement, reinforcing the idea that emotional distress can amplify the cognitive effects of stress<sup>3</sup>. Similarly, a 2025 investigation, revealed moderate levels of academic stress and anxiety among students, with significant gender differences with female students showing higher anxiety scores<sup>5</sup>.

Recent research in Nigeria has also begun to document the link between academic stress and suicidal ideation. Fadipe RA found a significant positive correlation between academic stress and suicidal thoughts among undergraduates in Oyo State; in their study on students' perspectives regarding workload and mental distress, observed that excessive academic demands can precipitate suicidal thinking among university students. These findings suggest that unmanaged academic pressure not only impairs educational outcomes but may also pose serious mental health risks<sup>6</sup>.

While prior studies in Nigeria have contributed valuable insights, most have been limited in scope often focusing on a narrow set of variables, such as stress and academic performance<sup>3</sup>, or stress and anxiety<sup>5</sup>. Few have examined a comprehensive model integrating perceived stress, depression, anxiety, suicidal behaviour, and academic performance within the same framework. Moreover, much of the available evidence has been drawn from specific faculties, such as science or engineering, limiting the generalization of findings to the broader undergraduate population.

The current study addresses this gap by adopting an integrated approach to examine how perceived stress interacts with depression, anxiety, suicidal behaviour, and academic achievement among Nigerian undergraduates. Such an approach is necessary for developing a nuanced understanding of the cumulative burden of stress and its psychological consequences. The findings are expected to inform the design of holistic stress management interventions, student counselling services, and faculty-specific academic adjustments. By identifying high-risk groups and mapping the interplay among these

psychosocial variables, this research seeks to provide evidence-based guidance for improving both the academic and mental health outcomes of Nigerian university students.

#### **Specific Aim**

The primary aim of this study is to explore how perceived stress relates to academic performance, depression, anxiety, and suicidal behaviour among undergraduates in a Nigerian university. The study seeks to generate evidence that can guide the development of targeted interventions promoting academic success and improved mental well-being among students.

## **MATERIALS AND METHODS**

### **Study Location**

The study was conducted at Osun State University, Osogbo, located in Osun State, Southwestern Nigeria. The university is a multi-campus institution with students drawn from diverse social and academic backgrounds.

### **Study Population**

The study population consisted of undergraduate students enrolled at Osun State University, Osogbo campus.

### **Inclusion Criteria**

All registered undergraduate students who provided written informed consent were eligible and participated in the study.

### **Study Design**

A **cross-sectional descriptive survey design** was adopted.

Data were collected using standardized, validated self-administered questionnaires.

### **Instruments**

Data for this study were collected using three standardized psychological instruments: the Perceived Stress Scale (PSS-10), the Suicidal Behaviours Questionnaire-Revised (SBQ-R), and the Hospital Anxiety and Depression Scale (HADS).

The **Perceived Stress Scale (PSS-10)**, developed by Cohen and colleagues, is a widely used tool for assessing the degree to which individuals perceive their lives as stressful. It measures how unpredictable, uncontrollable, and overloaded respondents find their daily experiences. The PSS consists of ten items, each rated on a 5-point Likert scale ranging from 0 (*never*) to 4 (*very often*), with items 4, 5, 7, and 8 reverse scored. The total score ranges from 0 to 40, with higher scores indicating greater levels of perceived stress. For interpretation, scores from 0–13 represent low stress, 14–26 moderate stress, and 27–40 high stress. The instrument has been validated for use in Nigeria, with Cronbach's alpha coefficients ranging between (0.63 and 0.86)<sup>7</sup>, while 0.87 was gotten for this study demonstrating good reliability and internal consistency.

The **Suicidal Behaviours Questionnaire-Revised (SBQ-R)** was used to assess suicidal ideation and risk. This four-item scale evaluates various aspects of suicidal thoughts and behaviours. The first item assesses lifetime suicidal ideation or attempts, the second measures the frequency of suicidal thoughts within the past year, the third explores communication of suicidal intent to others, and the fourth examines the self-reported likelihood of engaging in

suicidal behaviour in the future. Scores on the SBQ-R range from 3 to 18, with higher scores indicating greater risk of suicidal behaviour. A cutoff score of 8 or above denotes high suicide risk among Nigerian adolescents and young adults<sup>8</sup>. The instrument has been found reliable and valid for use among young populations, including university students<sup>9,10</sup>.

The **Hospital Anxiety and Depression Scale (HADS)**, developed by Zigmond and Snaith, was employed to measure symptoms of anxiety and depression among participants. It comprises 14 items divided equally into two subscales—seven items each for anxiety and depression. Responses are rated on a four-point Likert scale ranging from 0 (*not at all*) to 3 (*very often*), yielding possible subscale scores between 0 and 21. Scores are interpreted as follows: 0–7 (normal), 8–10 (borderline), and 11–21 (abnormal). For analytical purposes, scores of 8 and above were classified as positive for anxiety or depression. The HADS has been validated and widely used in Nigeria, with sensitivity values ranging from 85% to 93% and specificity between 86% and 91% in both clinical and community samples<sup>11</sup>. The instrument is particularly suitable for non-clinical populations such as university students due to its brevity, reliability, and clarity<sup>12</sup>.

#### Sample Size

The sample size for this study was computed using the formula below:

$$N = \frac{Z^2 pq}{d^2}$$

Where N = the desired sample size if population is < 10,000.

Z = the standard normal deviate usually set at 1.96 corresponding to 95% confidence interval

p = the proportion in the target population estimated to have a particular characteristic which if unknown is taken to be 50% = 0.5

$$q = 1 - p$$

d = degree of accuracy desired set at 0.05

The minimum study sample size from the prevalence was 384. A total number of 500 questionnaires was proportionately distributed among the faculties in the university.

#### Sampling Method

Stratified Random sampling method was used.

The sample size was distributed proportionately among medical and non-medical colleges.

Sample allocated to each class was

$$\frac{\text{Total number of undergraduate in the college} \times \text{Sample size}}{\text{Total Number of undergraduates in the 2024/25 session}}$$

#### Procedure

After obtaining class lists of undergraduates from the university's ICT department, the researchers approached students before their lecture periods to explain the study's objectives, potential benefits, and ethical assurances. Participants were informed that their responses would remain strictly confidential and would be used solely for academic purposes. Those who agreed to take part signed an informed consent form prior to participation.

Eligible students who met the inclusion criteria were selected through simple random sampling (balloting) process to ensure randomization. The chosen participants

received self-administered questionnaires, which were collected immediately upon completion by the researchers and trained research assistants. Each questionnaire was reviewed on submission to ensure completeness, and participants who left sections blank were politely encouraged to provide the missing responses if they were willing. All research assistants underwent prior training in data collection procedures to maintain consistency, accuracy, and ethical compliance throughout the study.

#### Ethical Considerations

Ethical clearance for this study was obtained from the Research Ethics Committee of Osun State University, Osogbo, Nigeria (Reference No: UNIOSUNHREC 2025/PBH/125). Participation was entirely voluntary, and informed consent was obtained from all respondents. Participants were assured of anonymity and confidentiality, and they were informed that they could withdraw from the study at any time without penalty. The study adhered to the ethical principles of beneficence, respect for persons, and non-maleficence, ensuring that no harm was done to participants.

#### Data Analysis

Data collected were analysed using the Statistical Package for the Social Sciences (SPSS), version 21. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize respondents' socio-demographic characteristics. Inferential statistics, including the Chi-square test and Student's *t*-test, were applied to examine associations between categorical and continuous variables. Furthermore, binary logistic regression analysis was conducted to identify predictors of perceived stress among undergraduates. A 95% confidence interval was used, and statistical significance was determined at a *p*-value of less than 0.05.

#### RESULTS

A total of 500 questionnaires were distributed, of which 435 were properly completed and returned, giving a response rate of 87.0%. Table 1 shows the socio-demographic variables, the respondents comprised 54.5% females and 45.5% males. Christianity (50.1%) and Islam (49.9%) were almost equally represented among the participants, while all respondents were single. The majority were of Yoruba ethnicity (94.9%), with only 5.1% identifying as Igbo. More than half of the respondents (56.6%) reported a low socioeconomic background, whereas 43.4% belonged to a higher socioeconomic class. In terms of academic level, 42.1% were in 100 level, while 57.9% were in higher levels. Furthermore, 58.4% of the respondents were enrolled in the College of Health Sciences, while 41.6% belonged to other colleges. Concerning parental occupation, 46.0% reported that their parents were civil servants, whereas 54.0% indicated that their parents were self-employed.

Among all participants, 30.1% and 69.9% revealed a below average and above average respectively.

Assessment of psychological variables (Table 2), revealed that most respondents (82.3%) exhibited low suicidal

behavior, while 17.7% reported high suicidal tendencies. Anxiety symptoms were normal among 52.3% of respondents, borderline among 34.9%, and abnormal among 9.9%. With respect to depressive symptoms, 10.1% were within the normal range, 30.1% were borderline, and 59.8% exhibited abnormal depressive symptoms. Stress assessment showed that 30.1% of respondents had below-average stress levels, whereas 69.9% experienced above-average stress. These findings indicate a considerable burden of psychological distress, particularly depression and stress, among the study population.

Table 3 shows the analysis of the association between sociodemographic variables and perceived stress showed that gender, age and college were significantly associated with stress levels ( $p = 0.001$ ). Female respondents reported a significantly higher prevalence of above-average stress (91.1%) compared with males (44.4%). Academic performance was also significantly related to stress, as all respondents with a CGPA between 2.0 and 2.99 reported above-average stress. Younger students experiencing higher stress than older students. However, socioeconomic background, academic level, and parents' occupation were not significantly associated with perceived stress ( $p > 0.05$ ).

Further analysis of data on psychological variables and perceived stress (Table 2), demonstrated significant associations between psychological variables and perceived stress ( $p = 0.001$  for all) [Table 4]. Respondents with high suicidal behavior were more likely to report moderate to high stress (89.6%) compared with those exhibiting low suicidal behavior (65.6%). Similarly, all respondents with abnormal anxiety symptoms (100%) reported above-average stress, while lower proportions of those with normal or borderline anxiety experienced elevated stress levels. Depressive symptoms were also strongly associated with stress, as 83.5% of respondents with abnormal depressive symptoms experienced above-average stress compared with 49.7% of those with normal or borderline depressive symptoms. These findings suggest that suicidal behavior, anxiety, and depressive symptoms are closely linked to increased perceived stress among the respondents.

Binary logistic regression analysis (Table 5), was conducted to identify sociodemographic predictors of above-average perceived stress. The results showed that gender, college, and age were significant predictors. Male respondents were significantly less likely to experience above-average stress compared with females (OR = 0.012, 95% CI: 0.003–0.041,  $p < 0.001$ ). Conversely, students in the College of Health Sciences were significantly more likely to report above-average stress than students from other colleges (OR = 31.317, 95% CI: 9.119–107.552,  $p < 0.001$ ). Age was inversely associated with perceived stress (OR = 0.884, 95% CI: 0.788–0.991,  $p = 0.035$ ), indicating

that younger students had a higher likelihood of experiencing elevated stress. Overall, the findings demonstrate that female gender, younger age, and enrolment in the College of Health Sciences were significant predictors of above-average perceived stress among the respondents.

Table 1 Sociodemographic Characteristics of the respondents

SN	Variable	Frequency	Percentage
1.	Gender		
	Male	198	45.5
	Female	237	54.5
2.	Religion		
	Christianity	218	50.1
	Islam	217	49.9
3.	Marital status		
	Single	435	100.0
4.	Ethnicity		
	Yoruba	413	94.9
	Igbo	22	5.1
6.	Socio-economic background		
	Low	246	56.6
	High	189	43.4
7.	Level		
	100 level students	183	42.1
	Other levels	252	57.9
8.	College		
	College of Health Sciences	254	58.4
	Other Colleges	181	41.6
9.	Parents occupation		
	Civil servants	200	46.0
	Self employed	235	54.0

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	College of Health Sciences	254	58.4
	Other Colleges	181	41.6
9.	Parents occupation		
	Civil servants	200	46.0
	Self employed	235	54.0

Table 2 Psychological variable among the respondents

1.	Suicidal Behavior		
	Low	358	82.3
	High	77	17.7
2.	Anxiety symptoms		
	Normal	240	52.3
	Borderline	152	34.9
	Abnormal	43	9.9
3.	Depressive Symptoms		
	Normal	44	10.1
	Borderline	131	30.1
	Abnormal	260	59.8
4.	Stress category		
	Below average	131	30.1
	Above average	304	69.9

Table 3: Association between Sociodemographic variable and Perceived Stress among the respondents

SN	Variable	Perceived Stress		$\chi^2$	Df	P-value
		Below Average	Above Average			
1.	Gender					
	Male	110(55.6%)	88(44.4%)	11.762	1	0.001
	Female	21(8.9%)	21(91.1%)			
2.	Socio-economic background					
	Low	76(30.9%)	170(69.1)	0.163	1	0.686
	High	55(29.1%)	134(70.9%)			
3.	Level					
	Fresher	52 (28.4%)	131(71.6%)	0.434	1	0.510
	Other students	79(31.3%)	173(68.7%)			
4.	College					
	CHS	47(18.5%)	207(81.5%)	39.104	1	0.001
	CSET	84(46.4%)	97(53.6%)			
5.	Parent occupation					
	Civil servants	66(33.0%)	134(67.0%)	1.464	1	0.226
	Self employed	65(27.7%)	170(72.3%)			
6.	Age	22.5725±3.03576	19.1546±3.00700	10.844*	433	0.001

Table 4. Association between Psychological variable and Perceived Stress among the respondents

SN	Variable	Perceived Stress		X <sup>2</sup>	Df	Pvalue
		Below Average	Above Average			
1.	Suicidal category					
	Low	123(34.4%)	235(65.6%)	17.297	1	0.001
	High	8(10.4%)	69(89.6%)			
2.	Anxiety Symptoms					
	Normal/borderline	131(33.4%)	261(66.0%)	20.562	1	0.001
	Abnormal	0(0.0%)	43(100.0%)			
3.	Depressive Symptoms					
	Normal/borderline	88(50.3%)	87(49.7%)	56.602	1	0.001
	Abnormal	43(16.5%)	217(83.5%)			

Table 5. Sociodemographic Predictor of Above Average Perceived Stress among the respondents using Logistic Regression

SN	VARIABLE	ODDS RATIO	PVALUE	CONFIDENCE INTERVAL	
				LOWER	HIGHER
1.	Gender				
	Female (Ref)				
	Male (1)	0.012	0.001	0.003	0.041
2.	College				
	Other college (Ref)				
	College of Health Science	31.317	0.001	9.119	107.552
3	Age	0.884	0.035	0.788	0.991

supportive counseling could therefore play crucial roles in preventing escalation to self-harm.

Approximately **9.9%** of respondents reported high anxiety symptoms. Across African universities, anxiety prevalence often ranges between 12% and 25%.<sup>13</sup> The Cognitive-Behavioral Model of Anxiety helps explain this pattern: distorted thinking, maladaptive coping, and constant fear of academic failure can lead to persistent anxiety<sup>14</sup>. In Nigeria, cultural and familial expectations of success can further intensify this fear. Hence, interventions that emphasize cognitive restructuring, time management, and stress reduction may effectively mitigate student anxiety.

A particularly concerning finding was that 59.8% of students reported high levels of depressive symptoms. This prevalence exceeds that of prior studies such as 47.2% at the University of Ibadan and 41.5% among students in Lagos, and even surpasses those from other African contexts like Kenya (37.8%) and South Africa (45.3%).

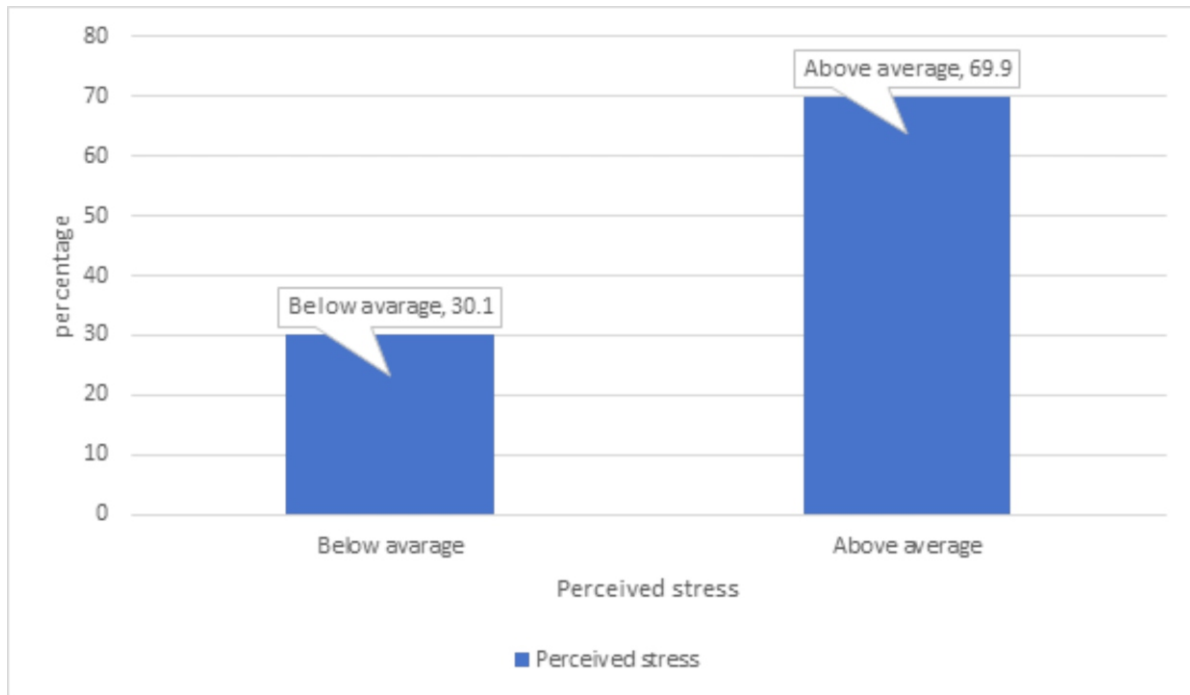


Fig 1 Prevalence of Perceived Stress among the Respondents

**DISCUSSION**

This study revealed that 17.7% of the undergraduates assessed had high suicidal tendencies, reflecting a significant mental health concern within this population. This means that nearly one in six students may be battling suicidal thoughts or impulses—an alarming figure consistent with global estimates ranging from 10% to 30%. The finding underscores the urgent need for preventive mental health interventions within university communities. From a theoretical perspective, the stress–diathesis model explains this trend: the combination of academic demands, separation from family, and financial struggles may trigger suicidal ideation among students who already have emotional vulnerabilities. Proactive screening and

Such a high rate may reflect the combined impact of financial stress, academic overload, and limited access to mental health support services in Osogbo. Beck's Cognitive Theory of Depression provides useful insight: negative self-perception, hopelessness, and maladaptive thought patterns often sustain depressive symptoms<sup>15</sup>. These findings stress the importance of incorporating regular mental health assessments and counseling within university systems.

**Prevalence of Perceived Stress among the Respondents**

The finding that 69.9% of the undergraduates experienced above-average stress suggests that academic stress is nearly universal in this context. This rate is similar to those reported in Nigerian universities and across Africa<sup>16</sup>. The Transactional Model of Stress and Coping<sup>17</sup> offers a clear framework for understanding this phenomenon. It

posits that stress arises when individuals perceive environmental demands as exceeding their coping resources. In this case, the combination of demanding academic work, financial pressure, and uncertainty about post-graduation prospects may have contributed to students' high stress levels. Universities must therefore promote resilience-building and stress management programs that help students develop healthier coping strategies.

#### **Relationship between Psychological Variables and Perceived Stress**

Students with high suicidal behavior were significantly more likely to experience above-average stress (89.6%) compared to those with low suicidal behavior (65.6%). This demonstrates a strong link between stress and suicidal tendencies. Previous studies<sup>18,19</sup> have also identified stress as a potent predictor of suicidal ideation. The Stress–Diathesis Model of Suicide supports this association, suggesting that overwhelming stress can activate latent emotional vulnerabilities. Continuous stress without coping outlets may lead some students to view suicide as an escape from persistent psychological pain.

All respondents with abnormal anxiety symptoms reported above-average stress. This supports the idea of a reciprocal relationship—stress increases anxiety, and anxiety amplifies stress perception. Physiologically, this may reflect heightened HPA axis activity, which elevates cortisol levels and sustains hyperarousal<sup>20,21</sup>. Breaking this cycle requires early identification and stress-reduction strategies that incorporate both psychological and physiological interventions. A similarly strong association was observed between depression and perceived stress: 83.5% of students with high depressive symptoms also reported above-average stress. This aligns with earlier studies that show chronic stress contributes to the onset and persistence of depression<sup>22</sup>. Moreover, depression may increase an individual's sensitivity to stress—a process known as stress generation<sup>23</sup>. These findings reinforce the need for universities to adopt a multi-dimensional approach to mental health support that targets both stress management and emotional regulation.

#### **Sociodemographic Predictors of Perceived Stress**

Female students were found to be significantly more likely to experience above-average stress than their male counterparts. This pattern is consistent with global finding<sup>23,24</sup>. Possible explanations include greater emotional sensitivity, multiple role expectations, and higher social evaluation pressures faced by women. Additionally, cultural norms may discourage men from expressing vulnerability, resulting in underreporting of stress.

Students in the College of Health Sciences were more likely to experience higher stress levels than those in other faculties, which aligns with evidence that health-related disciplines often demand greater workload, longer study hours, and rigorous assessments<sup>25,26</sup>. These findings point to the need for institutional reforms to manage workload and integrate stress management programs into health science curricula.

The inverse relationship between age and stress suggests that younger students experience more stress than older students. This is likely due to differences in coping maturity

and adaptation skills. Older students generally demonstrate better emotional regulation and problem-solving abilities<sup>27</sup>. Mentorship programs that connect younger students with older peers could therefore be beneficial in helping them adjust to the academic environment.

#### **CONCLUSION**

In conclusion, the study shows that perceived stress, anxiety, depression, and suicidal tendencies are alarmingly common among the respondents and more striking in those with probable academic difficulty from the low CGPA, pointing to a serious mental health challenge within the undergraduate population. The coexistence of high depressive and anxiety symptoms alongside notable suicidal risk reflects a deep connection between psychological distress and stress vulnerability. Sociodemographic differences also played a meaningful role in shaping students' experiences of stress. Female students, younger undergraduates, and those in health-related disciplines were found to be particularly susceptible to higher stress levels. This pattern likely arises from a combination of biological sensitivity, intense academic demands, and limited coping capacity in these groups.

#### **RECOMMENDATIONS**

Overall, the findings suggest that stress among university students is influenced by both individual and contextual factors. To effectively address this, universities must adopt comprehensive, inclusive mental health strategies that are sensitive to gender and academic discipline as well as peer mentorship for younger students. Such interventions should focus on building coping skills, strengthening emotional resilience, and improving access to mental health support services to foster healthier and more supportive learning environments.

#### **Authors' Contributions**

Kazeem Olaide Adebayo conceptualized and designed the study. Julianah Temilola Mosanya, Mosunmade Oshingbesan, Kolawole Abdullahi Ibrahim, Oluwabunmi Idera Nimata Buhari, Folorunsho Tajudeen Nuhu, and Adeola Olajumoke Ajayi contributed to data collection and data analysis. Joshua Falade, Kazeem Olaide Adebayo, and Oluwaseun E. Akpata drafted the initial manuscript. The manuscript was critically reviewed and edited by Joshua Falade and Oluwaseun E. Akpata. All authors contributed to the interpretation of findings, approved the final version of the manuscript, and agreed to be accountable for all aspects of the work.

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