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Short Communication

Anxiety and Depression Among Health Science Undergraduates in Ebonyi State, Nigeria

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ABSTRACT

Health science programs are known for their rigorous academic demands, placing students in stressful environments that may affect their mental health. This study aims to assess the prevalence and risk factors of anxiety and depression among health science undergraduates in Ebonyi State, Nigeria, from September to November 2023. This cross-sectional study surveyed 383 students from various health science disciplines in tertiary institutions across Ebonyi State, using self-reported measures to evaluate mental health outcomes. Results revealed alarmingly high rates of anxiety and depression. More than half (52.5%) of participants experienced moderate to severe anxiety, while 86.1% reported depression symptoms, with 47.5% experiencing moderate and 37.3% experiencing moderate-to-severe depression. Female students and those aged 20 years or younger were found to be particularly vulnerable to anxiety. Additionally, physiotherapy students reported higher levels of anxiety compared to those in other health science departments. No significant correlation was found between the department and the severity of depression. These findings highlight the critical mental health challenges faced by health science students in Nigeria and underscore the need for targeted mental health interventions, the establishment of robust support systems, and further research to explore the contributing factors.

Keywords: Anxiety, Depression, Mental health, Health sciences, Nigeria, Emotional distress

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Introduction

Health science programs are known for their rigorous academic demands, placing students in highly stressful environments that can significantly impact their mental health. Aspiring healthcare professionals must meet high academic standards, pass difficult exams, acquire practical clinical skills, and perform under pressure [1]. Emotional strain from clinical placements and internships further exacerbates these pressures [2], creating a breeding ground for anxiety and depression, which can affect both academic performance and long-term well-being [3]. While the mental health of tertiary institutions students has been widely studied, health science students, particularly in low- and middle-income countries like Nigeria, have received less attention. Studies globally have documented high rates of stress, anxiety and depression among medical students, with academic pressure, clinical exposure, and limited mental health resources being major contributors [4, 5]. Furthermore, mental health issues among students in health science programs are linked to poor academic performance and increased absenteeism [6]. However, research on the specific challenges faced by health science students in Nigeria remains sparse.

This study addresses this gap by examining mental health in health science undergraduates in Ebonyi State, Nigeria. It explores the role of cultural norms, gender roles, and age-related factors, as these elements may influence the expression and reporting of anxiety and depression. For instance, cultural attitudes towards mental health in Ebonyi State may impact how symptoms are expressed and addressed. Understanding these factors is critical to developing culturally appropriate mental health interventions for this group. This study also seeks to provide practical recommendations for improving mental health services and academic support systems at universities to better equip future healthcare professionals in Nigeria.

Methods

This study employed a cross-sectional survey design to assess the mental health of health science undergraduates in Ebonyi State, Nigeria. The study design enabled a snapshot of anxiety and depression symptoms in this population at a single point in time, using validated measurement tools. The research was conducted from September to November 2023.

Study population

The study focused on health science undergraduates enrolled in tertiary institutions in Ebonyi State, Nigeria. The population was selected due to the unique academic pressures and challenges health science students face. Participants were drawn from various disciplines, including medicine, nursing, pharmacy, radiography, medical laboratory science, and public health. The study aimed to recruit students of diverse age ranges, primarily those between 18 and 29 years old, with some older students included.

Sampling technique

A multi-stage sampling technique was employed. First, tertiary institutions offering health science programs in Ebonyi State were identified. Proportional sampling was then used to select participants from each institution based on student enrollment numbers. Within each institution, convenience sampling was used to recruit students who were willing to participate.

Sample size calculation

A power analysis was conducted using G*Power software, version 3.1 to determine the required sample size. The analysis accounted for the anticipated prevalence of anxiety and depression in the target population, aiming for a statistical power of 80% at a significance level of 0.05. This calculation ensured sufficient power to detect moderate effect sizes related to mental health outcomes.

Measurement tools

Hamilton anxiety rating scale (HAM-A)

Hamilton developed the 14-item HAM-A in 1959 [7]. The scale was used to measure the severity of anxiety symptoms. It assesses both psychic (mental) and somatic (physical) symptoms of anxiety, with participants rating each symptom from 0 (not present) to 4 (severe). The total score ranges from 0 to 56, with higher scores indicating more severe anxiety. The HAM-A is a well-established tool with strong reliability and validity across various populations [1]. The scale's internal consistency (the Cronbach α) typically ranges between 0.70 and 0.90 and the test re-test reliability is robust in clinical settings. The scale effectively discriminates between patients with anxiety disorders and those with other psychiatric conditions, contributing to its widespread use in both research and clinical environments [7].

Patient health questionnaire-9 (PHQ-9)

Kroenke et al. developed the PHQ-9 in 1999. It is a 9-item questionnaire used to measure the severity of depressive symptoms [8]. Each item is rated from 0 (not at all) to 3 (nearly every day) based on how often the participant experiences a symptom over the past two weeks. The total score ranges from 0 to 27 and is calculated by summing the individual item scores. The severity of depression is categorized as follows:

0–4: None or minimal depression, 5–9: Mild depression, 10–14: Moderate depression, 15–19: Moderately severe depression, 20–27: Severe depression. The PHQ-9 has been extensively validated in different populations, demonstrating strong psychometric properties and reliability [8, 9].

Survey methodology

Data were collected via an online Google Forms survey. The survey was distributed through email lists, social media groups, and online forums commonly frequented by health science students in Ebonyi State. The survey included the HAM-A, PHQ-9 and additional questions regarding demographics and items related to potential risk factors for anxiety and depression, such as academic workload, clinical exposure and personal life stressors. All questions were adapted to be appropriate for the context of health science students in Nigeria. The questionnaires used in the study were validated tools for measuring anxiety and depression symptoms in student populations.

The inclusion criteria

The inclusion criteria were as follows: Health science undergraduates enrolled in universities in Ebonyi State, participants aged 16 years and older, and willingness to provide informed consent for participation in the study.

The exclusion criteria

Undergraduates with a pre-existing diagnosis or ongoing treatment for severe mental health conditions (e.g. major depression, severe anxiety disorders) were excluded to avoid bias in the results and to ensure the study focused on students without prior severe mental health diagnoses.

Data analysis

The collected data were analyzed using SPSS software, version 25. Descriptive statistics were used to summarize the data and the chi-square test was applied to explore associations between variables, such as the severity of anxiety and depression, and demographic characteristics.

Results

Out of the 399 copies of the questionnaire administered, 383 were returned, properly filled and fitted for analysis, giving a response rate of 96.0%.

Presence of anxiety among health science undergraduates

A significant proportion of respondents experienced anxiety symptoms. The most common symptom was “fear of the worst happening” (37.9%), followed by other symptoms of anxiety (Table 1). The majority of respondents (47.5%) fell into the “mild anxiety” category. This finding indicates that while anxiety is prevalent among health science undergraduates, it is mostly mild.

Presence of depression among health science undergraduates

A high prevalence of depressive symptoms was observed. Specifically, 8.6% of respondents reported mild depression, 47.5% experienced moderate depression, 37.3% had moderate to severe depression, and 6.5% reported severe depression (Table 2). These findings highlight the significant mental health challenges faced by health science undergraduates, with a considerable portion experiencing moderate to severe depression.

Risk factors for anxiety and depression among health science students

The sociodemographic breakdown of respondents is shown in Table 3. Most participants were female (73.6%), young (primarily ≤20 and 21-30 years old), and from the Nursing Sciences Department (35.5%). Females were more likely to experience moderate/severe anxiety compared to males (30.1% vs 17.8%), suggesting that gender influences anxiety levels. Younger participants (≤20 years old) also had higher levels of moderate/severe anxiety (36.0%) than older groups, indicating age as a key factor in anxiety severity. Radiography students showed the highest percentage of moderate/severe anxiety (28.9%) (Table 3). Older participants (31-40 years old) were significantly less likely to experience moderate or severe depression compared to the youngest group (7.4% vs 30.8%), indicating that depression severity varies with age.

Table 1. Presence of anxiety among health science undergraduates (n=383)

Items	Severe	Moderate	Mild	Not at All	Positive (%)*
Numbness or tingling	9	28	95	251	9.7
Feeling hot	21	60	91	211	21.1
Wobbliness in legs	8	37	72	266	11.7
Fear of the worst happening	75	70	80	158	37.9
Dizzy or lightheaded	28	71	81	203	25.8
Heart pounding/racing	61	59	87	176	31.3
Unsteady	17	35	82	249	13.6
Terrified or afraid	37	57	76	213	24.5
Nervous	55	61	95	172	30.3
Feeling of choking	22	29	60	272	13.3
Hands trembling	29	30	87	237	15.4
Shaky/Unsteady	21	30	69	263	13.3
Fear of losing control	35	55	71	222	23.5
Difficulty in breathing	20	41	43	279	15.9
Fear of dying	31	43	70	239	19.3
Scared	34	55	96	198	23.2
Indigestion	20	44	79	240	16.7
Faint/Lightheaded	11	30	57	285	10.7
Face flushed	16	26	63	278	11
Hot/cold sweats	15	59	94	215	19.3

Severity of Anxiety	Minimal	Mild	Moderate	Severe	Total
No. of respondents	98	182	84	19	383
Percentage	25.6	47.5	21.9	5	100

*Positive response (%)=(severely+moderately)×100/383

No significant differences were found in depression severity across sexes, academic departments, or academic levels, suggesting that depression may not be strongly influenced by these demographic factors (Table 3).

Discussion

This study's finding of higher moderate to severe anxiety among female students is consistent with previous research showing higher anxiety levels in females in academic settings [10, 11]. However, it highlights the importance of considering cultural influences, such as those specific to Ebonyi State. Socialization patterns may lead females to express emotional distress more readily than males, who may suppress symptoms due to cultural gender norms [12, 13]. This finding emphasizes the need for culturally sensitive anxiety assessments and challenges the limitations of universal approaches in diverse populations.

Table 2. Presence of depression among health science undergraduates (n=383)

Variables	Presence of Depression	No. (%)
In the past two weeks, how often have you felt down, depressed, or hopeless?	Not at all	229(59.8)
	Several days	90(23.5)
	More than half the days	34(8.9)
	Nearly everyday	30(7.8)
In the past two weeks, how often have you had any thoughts of suicide?	Never	320(83.6)
	Occasionally	21(5.5)
	Sometimes	33(8.6)
	Attempt at suicide	9(2.3)
How is your sleep?	Getting less than three hours of sleep at night	35(9.1)
	Sleep reduced by at least two hours	16(4.2)
	Slight difficulty	59(15.4)
	Sleeping as usual	273(71.3)
How is your energy?	Not enough to do anything	21(5.5)
	Less energy than before	184(48)
	As much energy as ever	178(46.5)
Do you prefer to stay at home rather than going out and doing new things?	Yes	229(59.8)
	No	154(40.2)
You have a feeling that everything you have done has been a failure.	Completely disagree	148(38.6)
	Somewhat disagree	59(15.4)
	Neutral	98(25.6)
	Somewhat agree	52(13.6)
	Completely agree	26(6.8)
You have been very irritated and angry recently.	Completely disagree	89(23.2)
	Somewhat disagree	30(7.8)
	Neutral	148(38.6)
	Somewhat agree	50(13.1)
	Completely agree	66(17.2)
You are facing problems with making decisions.	Completely disagree	87(22.7)
	Somewhat disagree	36(9.4)
	Neutral	143(37.3)
	Somewhat agree	67(17.5)
	Completely agree	50(13.1)

Variables	Presence of Depression	No. (%)
You are facing a lack of concentration.	Completely disagree	66(17.2)
	Somewhat disagree	45(11.7)
	Neutral	151(39.4)
	Somewhat agree	68(17.8)
	Completely agree	53(13.8)
Performing tasks takes much time than usual for you.	Completely disagree	91(23.8)
	Somewhat disagree	36(9.4)
	Neutral	143(37.3)
	Somewhat agree	57(14.9)
	Completely agree	56(14.6)
You are experiencing a loss of appetite.	Completely disagree	163(42.6)
	Somewhat disagree	29(7.6)
	Neutral	122(31.9)
	Somewhat agree	39(10.2)
	Completely agree	30(7.8)
You suddenly developed trust issues.	Completely disagree	81(21.1)
	Somewhat disagree	34(8.9)
	Neutral	122(31.9)
	Somewhat agree	56(14.6)
	Completely agree	90(23.5)
Severity of depression	None	0
	Mild	33(8.6)
	Moderate	182(47.5)
	Moderate severe	143(37.3)
	Severe	25(6.5)
	Total	383(100)

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The lower depression prevalence observed in the youngest age group, compared to older students, contradicts research suggesting higher depression rates among adolescents and young adults [14, 15]. This result could be due to protective social support systems in Ebonyi State, which may buffer younger students from mental health impacts [15, 16]. This finding calls for further culturally specific investigations into depression among university students, as universal assumptions about age-related risks may not apply in all contexts.

The lack of a significant sex difference in depression prevalence contrasts with studies showing higher rates in females [17, 18]. This discrepancy could stem from cultural factors in Ebonyi State that discourage males from acknowledging distress, leading to underreporting

Table 3. Sociodemographic characteristics and risk factors associated with anxiety and depression among health science undergraduates

Sociodemographic Characteristics		No. (%)	No. (%) Severity of Anxiety		χ^2	P	No. (%) Severity of Depression		χ^2	P
			Minimum/ Mild (n=280)	Moderate/ Severe (n=103)			None/ Mild (n=33)	Moderate/ Severe (n=350)		
Sex	Male	101(26.4)	83(82.2)	18(17.8)	5.741	0.017	9(8.9)	92(91.1)	0.015	0.902
	Female	282(73.6)	197(69.9)	85(30.1)			24(8.5)	258(91.5)		
Age (y)	≤20	189(49.3)	121(64)	68(36)	15.847	<0.001	14(7.4)	175(92.6)	8.478	0.014
	21-30	181(47.3)	149(82.3)	32(17.7)			15(8.3)	166(91.7)		
	31-40	13(3.4)	10(76.9)	3(23.1)			4(30.8)	9(69.2)		
Department	Radiography	90(23.5)	64(71.1)	26(28.9)	12.991	0.011	8(8.9)	82(91.1)	5.232	0.264
	Nursing sciences	136(35.5)	109(80.1)	27(19.9)			14(10.3)	122(89.7)		
	Medical laboratory sciences	78(20.4)	60(76.9)	18(23.1%)			9(11.5)	69(88.5)		
	Physiotherapy	62(16.2)	35(56.5)	27(43.5)			2(3.2)	60(96.8)		
	Others	17(4.4)	12(70.6)	5(29.4)			0	17(100)		
Level	100	81(21.1)	63(77.8)	18(22.2)	3.963	0.138	5(6.2)	76(93.8)	0.794	0.672
	200	191(49.9)	131(68.6)	60(31.4)			18(9.4)	173(90.6)		
	300	111(29)	86(77.5)	25(22.5)			10(9)	101(91)		

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of depressive symptoms. The sample size or limitations in measurement tools, such as the PHQ-9, may also explain the lack of observed gender differences.

Finally, the mental health challenges university students face in this study reflect broader trends in academic populations [10, 19]. Like previous research by Maeng & Milad [11] and Asher et al. [20], the study confirms that students in high-pressure fields like health sciences experience heightened anxiety and depression. These findings underscore the need for targeted mental health interventions, such as counseling and stress-management programs, to address the specific challenges faced by health science students, as supported by Hawes et al. [16].

Conclusion

This study reveals a concerning prevalence of anxiety and depression among health science students in Nigeria, highlighting the urgent need for specific mental health interventions tailored to their academic and clinical pressures. To support these students' well-being and educational success, universities should implement counseling services, peer support programs, and stress-management workshops. These interventions should address health science students' unique stressors, such as clinical rotations, academic workload, and exposure to high-stress environments.

Recommendations

Future research should investigate the impact of specific stressors, particularly clinical rotations and academic workload, on mental health outcomes. Additionally, exploring the role of institutional support systems, such as mentorship, peer support, and faculty engagement, could provide valuable insights into effective interventions. To address the limitations of this study, future research should consider longitudinal designs to track changes over time and use larger, more diverse samples to enhance generalizability.

Implications for policymakers

We recommend prioritizing mental health in academic institutions through the implementation of mandatory mental health screenings for all students, especially those in high-stress programs like health sciences, ensuring adequate funding and staffing for mental health counseling services on campus, and organizing awareness campaigns to reduce stigma associated with mental health issues and encourage help-seeking behavior.

We suggest integrating mental health into curricula by incorporating mental health education, emphasizing stress management, coping strategies, and self-care techniques. We also recommend implementing flexible academic policies to accommodate students' mental health needs, such as extensions on assignments and exams.

Finally, support for vulnerable groups must be provided through the development of targeted interventions for female and younger students who are at higher risk of anxiety, fostering peer support programs to provide emotional support and reduce feelings of isolation.

Implications for the public

Reduce stigma by challenging negative stereotypes and misconceptions about mental illness.

Promote open dialogue by encouraging open conversations about mental health to normalize seeking help.

Support mental health initiatives by advocating for increased funding and resources for mental health services.

Practice self-care by prioritizing self-care practices like mindfulness, exercise, and adequate sleep.

Limitations of the study

This study's cross-sectional design limits the ability to establish causal relationships, and longitudinal studies are needed to track changes in mental health over time. The self-report nature of the study may also introduce social desirability bias, potentially underestimating the true prevalence of mental health issues. Although the sample size of 383 participants provides a solid foundation, it may not fully represent Southeast Nigeria's broader population of health science students. A larger sample size could enhance the generalizability of the findings and uncover additional data nuances.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the College of Health Sciences Ethical Research Committee Evangel University Akaeze, Ebonyi State, Nigeria (Code: EU/CHERC/2022).

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Authors' contributions

Conceptualization, methodology, writing the original draft and project administration: Odochi Chukwu and Maryjoy Umoke; Formal analysis and resources: Odochi Chukwu; Investigation, review and editing: Odochi Chukwu and Cordilia Iyare; Supervision and validation: Maryjoy Umoke.

Conflict of interest

The authors declared no conflict of interest.

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