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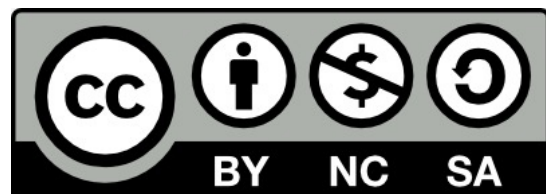


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Pre-Examination Stress Among Pre-Clinical Medical Students: A Nigerian Survey

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ABSTRACT

Introduction: The demands of medical education predispose to high stress levels, compromising students' well-being and performance. This study investigated the sources, severity, and effects of pre-examination stress and the coping mechanisms adopted by medical students in a Nigerian University.

Materials and Methods: This e-survey conducted in Delta State, Nigeria adopted a descriptive cross-sectional design. A questionnaire developed by Google Forms was disseminated using WhatsApp to 200 and 300 level medical students in the Faculty of Basic Medical Sciences after ethical authorization. It encompassed questions concerning the causes and effects of pre-exam stress, and the coping mechanisms. S-Anxiety subscale of the State-Trait Anxiety Inventory (STAI) was included to assess the prevalence and severity of stress. Fully completed questionnaires were received from 167 respondents, aged 16-30 years. The Statistical Package for Social Sciences (Version 27.0) compared the frequencies using the Chi-Square test and analysed the differences in STAI scores using the independent t-test and the analysis of variance. Significance was set at $p < 5\%$.

Results: Mean anxiety scores were higher in females, 200 level students and those residing in personal rooms. High anxiety levels were more prevalent in females (46, 49.5%) than males (28, 37.8%) ($p < 0.05$). Prayer and physical exercises were the predominant coping strategies in females and males respectively.

Conclusion: Medical education can adversely affect students' mental health. To mitigate this, universities should design curricula that address students' challenges and provide mental health resources for students.

Key words: Exam stress, mental health, academic performance, coping strategies.

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INTRODUCTION

Stress refers to any threat to an individual's biopsychosocial well-being, including reactions to distress that exceeds one's tolerance capacity.^{1,2} It encompasses one's physical, psychological, or emotional feedback to modifications that pose potential danger to one's stability and well-being.^{3,4}

Medicine education, though noble, is highly competitive, requiring outstanding entrance exam performance,⁵ with an aim of producing skilled physicians, the programme's comprehensive curricula can have overwhelming effect on students' psychosocial wellbeing.⁶⁻⁸ Mental health challenges can drastically reduce quality of life.¹ Medical students experience higher levels of stress, anxiety and depression compared to the

general populace, yet institutional support for their psychological well-being are often insufficient.^{4,9} Suicide ranks as the second leading cause of student mortality.⁴

The intense pressure to excel in exams contributes to medical students' anxiety.¹⁰⁻¹² Test anxiety elicits cognitive, physiological and behavioural responses, driven by fear of failure.^{5,13} Excessive anxiety negatively impacts academic performance leading to psychological distress, while moderate levels of anxiety can be motivating.^{3,9}

Exam stress arises from the competitive medical training and the pressure to excel, driven by societal expectations and scholarship requirements.^{2,4} Fear of exams, recurring tests, ineffective study habits, tight schedules, past failures, poor time management, uncertainty about the future, and overwhelming workloads are the main contributors.^{2,4,13,14} Exam stress is furthermore aggravated by social factors like high parental expectations, poor living conditions, financial constraints, insufficient rest and poor nutrition.^{3-5,12}

Exam anxiety elicits a multifaceted response, including changes in behaviour, metabolism, hormone levels, psychology and immunity whose degrees vary depending on factors such as exam type, physical activity, age, past experiences, gender, endurance, individual's temperament, spirituality and cultural background.^{9,12,15} Junior students and commonly females experience more significant impact of exam anxiety characterized by the following; burnouts, memory impairment, anxiety disorders and decreased focus.^{6,9-11,16} Students become isolated and experience impaired cognitive function that subsequently compromises their academic performance and also patient care in future.^{4,7} Common

documented symptoms of exam stress include sweating, headache, palpitations and fatigue.^{2,16} Extreme or high anxiety levels make learning difficult and this may prompt the students to use stimulants in order to relive stress symptoms. Unfortunately, despite knowing the potential side effects of these stimulating substances, students choose to disregard them.¹⁷

Addressing student stress levels is crucial for ensuring quality medical education.^{1,16} Identifying the causes of stress helps in effective prevention of depression and anxiety.^{4,9,15} The intention of this research was to investigate the sources, levels, and effects of pre-examination stress at a Nigerian university and identify the relevant coping strategies.

Materials and methods

This study employed a descriptive cross-sectional e-survey design, targeting second- and third-year medical students at a Nigerian tertiary institution. Approval was secured from the ethics committee of the Faculty (Ref. No: RBC/FBMC/DELSU/24/464).

Participants included adult students (aged ≥ 18 years) enrolled in the Medicine and Surgery program who were preparing for their end-of-semester examinations, scheduled to begin two weeks after the distribution of the questionnaire. Students with diagnosed psychiatric conditions or those currently taking antidepressants or antipsychotic medications were excluded to minimize confounding variables. Students aged below 18 years were also excluded from this study. The investigators explained the purpose and rationale for the study to those who met the selection criteria. Participants who gave their informed consent were included in a WhatsApp group. A questionnaire was developed using Google Forms and distributed via the WhatsApp

platform. It was sent to a total of 127 second-year students (200 level) and 43 third-year (300 level) students, with 170 questionnaires filled and returned, forming the study population. To ensure confidentiality, no identifying information, such as names or matriculation numbers, were included in the questionnaire.

The questionnaire contained five sections: the first section gathered demographic information, while the second section utilized the Spielberger State-Trait Anxiety Inventory (STAI), specifically the state anxiety subscale (S-STAI). The third section assessed the psychological and academic causes of stress, while section four investigated the physical and mental effects of exam stress. The final stage focused on evaluating which coping strategies the students utilized to alleviate stress symptoms.

A validated tool called the S-Anxiety subscale of the S-STAI, confirmed for accurately assessing exam-stress among medical students, was employed to determine the severity and prevalence of exam stress.¹² This self-rated 20-item questionnaire yields scores ranging from 20 to 80, with responses rated on a four-point Likert scale: 1 (not at all), 2 (somewhat), 3 (moderately), and 4 (very much so). Negative items, such as "I feel tense," were scored directly, whereas positive items, such as "I feel calm," were reverse scored. A total score below 40 indicated low anxiety, while scores between 40-59 and 60-80 indicated moderate and high anxiety levels, respectively¹⁸

Data collected were entered into Microsoft Excel and analyzed using SPSS software (Version 27.0, Chicago IL, USA). The prevalence of stress was calculated and presented as percentages, with comparisons based on gender and year of study assessed using the Chi-Square test. Quantitative variables,

such as age and STAI scores, were summarized using means and standard deviations, and their differences evaluated using the unpaired t-tests and analysis of variance. These tests were significant at $P < 0.05$.

RESULTS

Out of the 219 medical students, 170 voluntarily participated in this study. However, 3 students did not fully complete their questionnaires hence, these were excluded from the study. The study evaluated the anxiety levels of 167 medical students, including 125 second-year students (74.9%) and 42 third-year students (25.1%), representing 78.13% and 71.19% of their respective classes. The sample comprised more females (93, 55.7%) than males (74, 44.3%). Participants' ages ranged from 16 to 30 years, with a mean age of 19.56 ± 1.96 years. Notably, males had a higher average age (20.19 ± 2.35 years) than females (19.06 ± 1.41 years), while the mean age of second-year students (19.46 ± 2.13 years) was slightly lower than that of third-year students (19.86 ± 1.30 years), although this difference was not statistically significant ($p = 0.524$). Participants were categorized by age, with the majority falling within the 16-20 age group (126, 75.4%), followed by the 21-25 age group (38, 22.8%), and lastly the 26-30 age group (3, 1.8%). Most participants resided in university hostels (94, 56.3%), while others lived in private hostels (41, 24.6%) or in their own accommodations (32, 19.2%) (Table 1). Mean anxiety scores were significantly higher among females compared to males ($P = 0.035$) and among second-year students compared to third-year students ($P = 0.047$). Both class and sex categories exhibited moderate anxiety levels. Regarding living arrangements, students in their own rooms or apartments reported the highest anxiety scores, while those in university hostels had the lowest ($P = 0.042$) (Table 2). The younger age-groups displayed moderate anxiety levels, while those in the 26-30 age group demonstrated

higher anxiety scores although the variances were not statistically significant ($P=0.390$) (Table 2).

A majority of students experienced moderate anxiety (78, 46.7%), followed by high anxiety (74, 44.3%), with only a few reporting low anxiety levels (15, 9.0%) (Table 3). High levels of anxiety were more prevalent in females (46, 49.5%) compared to males (28, 37.8%). In contrast, moderate and low anxiety levels were more common in males ($p=0.031$). Among second-year students, high anxiety levels were predominant (60, 48%), while moderate and low anxiety were more frequent in third-year students ($P=0.024$). Additionally, anxiety levels varied by area of residence ($P=0.019$), with high anxiety most common among those living in their own accommodations (19, 59.4%) and moderate to low anxiety being more frequent among hostel residents (Table 4).

The main causes of exam stress included unsatisfactory revision time (151, 90.4%), heavy workload (144, 86.2%), irrational thoughts about exam results (131, 78.4%), difficulty recalling information (127, 76%), and disturbed sleep (120, 71.9%). Notably, certain stressors, such as difficulty recalling information, feeling inadequately taught, disrupted sleep, lack of physical activity and finding medical concepts difficult were reported more by females ($P<0.05$) (Table 5). The most common effects of exam stress were fatigue (152, 91.0%), disturbed sleep cycles (135, 80.8%), mood swings (119, 71.3%), and irritability (117, 70.1%). Females reported higher rates of various stress effects, including stomach nervousness, loss of appetite, irritability, mood swings, decreased concentration, sleep disturbances, and headaches ($P<0.05$) (Table 6). The predominant coping strategies included praying (145, 86.8%), engaging with social

media (142, 85.0%), listening to music (135, 80.8%), and sleeping (134, 80.2%). Prayer was more frequently utilized by females, while males were more likely to engage in physical exercise to relieve stress ($P<0.05$) (Table 7). Among respondents, 79 students (47.3%) found these methods occasionally eased their stress, while 54 (32.3%) reported that coping strategies often provided relief (Table 8). Most participants (104, 62.3%) noted little improvement in daily performance, although 52 (31.1%) experienced marked improvement. Nine students (5.4%) reported no effect on their performance from coping methods, and two (1.2%) noted a slight decline. No significant gender differences were found in the effectiveness of coping strategies ($P>0.05$) (Table 9). Table 10 summarizes the prevalence of the different levels of anxiety in various populations.

DISCUSSION

The prevalence of different levels of anxiety varied from frequencies reported in different populations (Table 10).^{6,7,10,12} Rahman *et al.*¹ reported 78.3% of Malaysian preclinical students facing stress while Rajanayagam *et al.*² observed a significant rise in anxiety among Indian students during exams. Competitive medical education, especially the basic sciences like Biochemistry and Anatomy, aggravates stress affecting one's mental health.¹¹ Improving the relationships between lecturers and students and addressing the causes of stress may alleviate high anxiety levels.¹⁹

Females scored significantly higher anxiety scores, congruent with Rehman *et al.*⁷ In contrast, lack of sex differences in anxiety scores was documented by Farajpour and Mashoufi⁹ and Divya *et al.*⁸ Severe anxiety was more predominant in females, while moderate and low anxiety levels were prevalent in males, conforming to the findings by Memon *et al.*¹⁰ Patil & Aithala³ described higher anxiety in males. The

metacognitive beliefs, traditional responsibilities and higher academic expectations make females more prone to anxiety.¹⁰ Females have higher adrenocorticotrophic hormone (ACTH) levels and subsequent elevation in estradiol and cortisol levels, which impact their responses to stress.¹⁸ Furthermore, females tend to over-report symptoms and express more concerns about their workload.¹⁹

Both 200-level and 300-level students showed moderate anxiety, with 200-level students scoring significantly higher. Patil *et al.*¹⁶ found mild to moderate stress in final-year students, while Nagpal *et al.*¹² reported moderate anxiety in first-year students. Stress progressively increases, usually reaching a peak among final-year students¹⁶⁻²⁰. Variations in anxiety levels may result from the exam experience of 300-level students. Although clinical rotations contribute to stress, final-year students often report fewer symptoms but still face anxiety from excess workloads and transitions to no jobs.^{10,20}

The age differences among the 200-level and 300 level students were not statistically significant. Younger students experience higher anxiety levels, which decreases with age.^{6,10,14,15} Older students have developed better coping strategies for exam stress over time.¹³ Students living in private accommodations reported higher anxiety levels than those in university hostels who perhaps were exposed to more support and better social interaction.

The primary stressors in our study included lack of revision time, excessive workload, irrational thoughts about exam results, inability to recall information, and disturbed sleep cycles. Similar issues were recorded in previous research among clinical students at the same university.¹⁵ Other common causes documented by other scholars include lengthy syllabi,¹⁶ poor time

management and exam marathon³ excessive lectures and financial constraints,¹ high parental expectations and sleep disturbances.¹² Females reported higher stress levels from recalling information and inadequate teaching, while males were more stressed by workloads.³ Additionally, females also reported stress due to distance from parents. Rehman *et al.*⁷ found more females experienced pre-exam memory loss, hence requiring more time and effort to comprehend concepts.

Improving time management skills is essential for reducing last-minute cramming, enhancing comprehension, and alleviating exam anxiety.¹² To manage course overload, curricula should be structured into “must know,” “desirable to know,” and “nice to know” categories in an 80:20:10 ratio, with student input and interactive teaching.¹² Reducing teacher-related stress requires clear learning outcomes, effective communication, and adequate resources.¹⁵ Inadequate sleep and poor nutrition due to financial constraints, negatively affect cognitive function and performance. This emphasizes the need for access to healthy and affordable meals.^{15,19}

In the current study, pre-exam anxiety resulted in fatigue, disturbed sleep, mood swings, and irritability. Rizvi *et al.*¹¹ reported comparable issues, particularly among females, with symptoms linked to increased stress hormones which can lower immunity and contribute to weight gain. In our study, 12.9% of female participants reported menstrual disturbances, marginally lower than the 15.19% in Karachi who associated this with hormonal imbalance.¹¹ Moreover, 32.9% of respondents used energy drinks, lower than the 38.94% reported by Rizvi *et al.*¹¹ Khalifah *et al.*¹⁷ noted that 84.9% consumed tea and 70.1% coffee. These can boost mood but may also lead to sleep disruption and fatigue.¹¹

Students in our study managed stress through prayer, social media, music, and sleep. Prayer and meditation promote calmness and self-esteem.^{11,15} Coping strategies by medical students reported in literature include; sports and religious practices,¹ and reliance on familial support.⁴ None of our students reported alcohol use, and 1.2% smoked, compared to 2.6% and 13.4% reported by Khalifah *et al.*¹⁷ who inferred that medical student have lower levels of substance use compared to their peers. Females primarily used prayer, while males preferred to exercise. According to Sonali *et al.*¹⁴ females are more open to counselling. Despite the knowledge of coping mechanisms, very few medical students employ these techniques.¹⁹ In our study, 47.3% reported coping mechanisms sometimes alleviated stress, with 31.1% noting marked improvement. These were higher than the findings of Loya and Jiwane⁵. There is therefore a need for effective stress management, and universities should prioritize recreational facilities.^{1,12}

There is need for early diagnosis of pre-exam stress and accessible counselling to prevent complications.^{2,6,12,15} A structured orientation program can enlighten students about course expectations and support facilities.^{5,6,12} Collaboration among parents, educators, and administrators is essential to improve living environments and alleviate stress.¹² To protect medical students' mental well-being, revising the curriculum is essential.^{5,14,19} This entails re-evaluating lecture timings and teaching methods.¹⁵ Regular assessments and access to question banks can significantly reduce exam-related anxiety.⁵ The current study employed the state anxiety portion of the S-STAI test to specifically assess pre-examination stress. This focused approach shortened the survey and encouraged more accurate and prompt responses from students, thereby enhancing the

reliability of the collected data. Conduction of the study in a single university and adoption of the convenience sampling restricted the sample size, thus, findings can't be extrapolated to the larger medical student population. The qualitative data gathered may have been subjective while responses could have been constrained owing to the utilization of structured questions. Additionally, there is potential for reporting bias, as students may have adjusted their answers to align with perceived expectations or social desirability. We recommend a multi-institutional study to increase the sample size and allow comparisons across diverse populations. Including clinical-year students would provide a more comprehensive understanding of stress factors in medical education. Future research should also explore the relationship between stress levels and academic performance.

Conclusion

Medical education can adversely affect students' mental health. Universities should design curricula that address students' challenges, foster a supportive learning environment, regularly evaluate students' mental health and make mental health resources accessible and readily available.

REFERENCES

- 1 Rahman IA, Ismail S, Nur T, Binti A, Seman T, Farah N, *et al.* Stress Among Preclinical Medical Students of University Sultan Zainal Abidin. *J Appl Pharm Sci.* 2013;3(11):76–81.
- 2 Rajanayagam B, Manikandan S, Anand N, Selvaraj S. Prevalence of anxiety depression and stress among first year medical students in Tamilnadu. *Bioinformation.* 2023;19(5):649–54.
- 3 Patil S, Aithala M. Exam anxiety: Its prevalence and causative factors among Indian medical students. *Natl J Physiol Pharm Pharmacol.* 2017;12.
- 4 Kashyap K, Kumar P, Kashyap H.

- Depression, Anxiety, Stress and Suicide among Medical Student: A Brief Overview. *Int. j. Indian psychol.* 2023;11(4):2233–52.
5. Loya NS, Jiwane NN. Exam Anxiety in Professional Medical Students. *Int J Innov Sci Res Technol.* 2019;4(8).
 6. Daud S, Zakir Shaikh R, Ahmad M, Awan Z ul hassan. Stress in Medical Students. *Pakistan Journal of Med Sci.* 2014;8(3):503–7.
 7. Rehman F, Saeed I, Farasat Khan N, Shahzad H, Janjua AR, Ajmal Z. Measuring the Level of Examination Anxiety among Students in a Private Medical College in Lahore. *PJHMS.* 2018;12(3):1085–8.
 8. Divya M, Navya C, Vidhu M, Aswathy M. Prevalence of perceived stress among first year under graduate medical students of a private medical college, Thrissur, Kerala. *MIJOCM.* 2019;11(3).
 9. Farajpour A, Mashoufi R. Medical Students Counteract with Test Anxiety: victory or defeat? *Canon J.med.* 2023;4(2):55–8.
 10. Memon I, Omair A, Barradah OM, Almegren NM, Almuqbil MM, Batarfi OH, *et al.* Measurement of Exam Anxiety Levels Among Medical Students and Their Association with the Influencing Factors. *Cureus.* 2023;15(7).
 11. Rizvi AH, Awaiz M, Ghanghro Z, Jafferi A, Aziz S. Pre-Examination Stress in Second Year Medical Student in a Government College. *J Ayub Med Coll Abbottabad.* 2010;22(2):152–5.
 12. Nagpal S, Grewal S, Walia L, Kaur V. A Study to Access the Exam Stress in Medical College and Various Stressors Contributing to Exam Stress. *Sch. J. App. Med. Sci.* 2015;3(7C):2615–20.
 13. Bonna AS, Sarwar ASM, Nasrullah SM, Razzak KS Bin, Chowdhury SR, Rahman S, *et al.* Exam Anxiety among Medical Students in Dhaka City and Its Associated Factors-A Cross-sectional Study. *Asian J. Med. Health.* 2020;20–30.
 14. Sonali K, Smriti M, Liwa P, Pragyan P, Sucheta P. Scoring Stress in Medical Students: A Stratified Analysis to Help Develop an Effective Mentor-Mentee Program in a Medical School Setting, Bhubaneswar, Odisha. *Am J Biomed Sci & Res.* 2023;17(6):633–7.
 15. Okoye OC. Perceived Stress and Stressors among Undergraduate Medical Students of a Nigerian Institution. *Malawi Med J.* 2022;34(4):245–51.
 16. Patil S, Patkar U, Patkar K. Comparison of Levels of Stress in Different Years of M.B.B.S. Students in A Medical College-An Observational Study. *Int. j. contemp. Med. Res. (online).* 2016;3(6):1655–7.
 17. Khalifah W, Abu-Yusef M, Abed-Elhadi A, Barq A, Yassen M, Hanani A, *et al.* Exams-related stress and the pattern of substance use and misuse among Palestinian medical and health sciences students. *Discov. Psychol.* 2023;3(1):36.
 18. Kudachi P, Latti R, Goudar S. Effect of Examination Stress on the Academic Performance of First Year Medical Students. *Biomedicine (Taipei).* 2008;28(8).
 19. Khan AN, Rasool SA, Sultan A, Tahira I. Prevalence of Examination Related Anxiety in a Private Medical College. *J Ayub Med Coll Abbottabad.* 2013;25(2):113–8.
 20. Manisha M, Pavithra V, Suganya M, Arun B. Evaluation of Exam Anxiety among Health Science Students. *Int. J. Res. Rev.* 2019;6:359–63.
- Ominde, BS, Enaohwo, MT, Jeremiah, O, Omoro, OF, Igbigbi, PS. Pre-Examination Stress Among Pre-Clinical Medical Students: A Nigerian Survey. *Afr. J. Trop. Med. & Biomed. Res.* 2025; 8(2) 27-33
<https://dx.doi.org/10.4314/ajtmbr.v8i2.2>