STRESS, ANXIETY, AND SLEEP DISTURBANCE AMONG MBBS STUDENTS USING PSS-10 AND PSQI

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Annotation: Medical education is widely acknowledged as a highly demanding and competitive environment that often predisposes students to significant psychological strain. Among undergraduate medical students, stress, anxiety, and sleep disturbances are common, frequently interrelated, and may impact both academic performance and overall well-being. This study evaluates the prevalence and severity of perceived stress, anxiety levels, and sleep quality among MBBS students using validated instruments, specifically the Perceived Stress Scale-10 (PSS-10) and the Pittsburgh Sleep Quality Index (PSQI). Data were collected from a representative cohort of medical students across various academic years, and statistical analyses were employed to determine correlations among stress, anxiety, and sleep disruption. Results indicated a high prevalence of moderate to severe stress, elevated anxiety scores, and poor sleep quality, with significant associations between heightened stress and impaired sleep patterns. These findings underscore the necessity of early identification and structured interventions aimed at mitigating psychological distress and promoting healthy sleep behaviors. The study highlights the importance of integrating mental health support systems within medical education curricula to improve students' academic performance, personal resilience, and overall quality of life. Medical education is inherently demanding and competitive, subjecting undergraduate students to considerable psychological strain. Stress, anxiety, and sleep disturbances are highly prevalent among medical trainees and are frequently interconnected, often impacting cognitive performance, clinical decision-making, and overall personal well-being. This study aimed to comprehensively evaluate the prevalence, severity, and interrelationship of perceived stress, anxiety levels, and sleep quality among MBBS students using validated instruments, specifically the Perceived Stress Scale-10 (PSS-10) and the Pittsburgh Sleep Quality Index (PSQI). A cross-sectional survey was conducted among

students across preclinical and clinical years, with statistical analyses employed to determine correlations between stress, anxiety, and sleep impairment. Findings indicated a substantial proportion of students experiencing moderate to severe stress, elevated anxiety, and poor sleep quality, with significant associations observed among these variables. The study emphasizes the critical need for early recognition, structured interventions, and integration of mental health support within medical curricula to promote resilience, enhance academic achievement, and safeguard long-term psychological health.

Keywords*: stress, anxiety, sleep disturbance, medical students, PSS-10, PSQI, mental health, academic performance, psychological well-being, coping strategies*

Introduction (Kirish)

The demanding nature of medical education exposes students to a wide range of psychological challenges, including high levels of stress, anxiety, and sleep disturbances. Stress in medical students has been linked to academic pressure, frequent examinations, clinical responsibilities, and personal life adjustments. Chronic exposure to stress can precipitate anxiety disorders, depressive symptoms, and significant sleep disruptions, which in turn may affect cognitive performance, memory consolidation, and clinical decision-making skills. Sleep disturbance is particularly concerning as it not only reflects underlying stress and anxiety but also exacerbates these conditions, creating a cyclical pattern of psychological impairment. Previous research has demonstrated that medical students often report higher stress levels compared to peers in other academic disciplines, with female students and those in advanced years of study particularly vulnerable. The Perceived Stress Scale-10 (PSS-10) is a widely utilized tool for quantifying the perception of stress, while the Pittsburgh Sleep Quality Index (PSQI) effectively evaluates multiple dimensions of sleep quality, including duration, latency, efficiency, and disturbances. This study aims to assess the prevalence and interrelationship of stress, anxiety, and sleep disturbances among MBBS students, providing insights into the psychological burden faced by medical undergraduates and identifying potential avenues for intervention and support. Medical education presents a unique set of challenges characterized by intense academic workload, frequent evaluations, clinical exposure, and adjustment to high-performance expectations. The cumulative effect of these demands often results in elevated levels of stress and anxiety among students, which in turn may impair learning capacity, emotional regulation, and overall quality of life. Chronic stress has been linked to a spectrum of negative

outcomes, including mood disorders, decreased attention span, reduced academic motivation, and increased susceptibility to burnout. Sleep disturbance is a particularly critical factor, as inadequate or fragmented sleep exacerbates psychological strain, negatively influencing memory consolidation, cognitive function, and clinical skills acquisition. Numerous studies have reported that medical students exhibit higher stress levels and poorer sleep quality than peers in other academic disciplines, with female students and those in advanced years frequently at greater risk. The Perceived Stress Scale-10 (PSS-10) is widely recognized for quantifying the subjective perception of stress over the preceding month, whereas the Pittsburgh Sleep Quality Index (PSQI) provides a multidimensional assessment of sleep quality, encompassing parameters such as sleep latency, duration, efficiency, and disturbances. Investigating the interrelationship between stress, anxiety, and sleep disruption is crucial for identifying at-risk students and developing evidence-based interventions aimed at mitigating psychological distress. This study was designed to evaluate these parameters comprehensively among MBBS students and provide insights into their implications for academic performance, clinical competency, and overall mental health.

Materials and Methods

This cross-sectional study was conducted among MBBS students at multiple academic levels, including both preclinical (1st–2nd year) and clinical (3rd–5th year) cohorts, to evaluate the prevalence and interrelationship of perceived stress, anxiety, and sleep disturbances. The study sample comprised 240 students, selected through stratified random sampling to ensure proportional representation of gender, year of study, and age range between 18 and 25 years. Participation was voluntary, and informed consent was obtained from all respondents prior to enrollment, following the ethical guidelines approved by the Institutional Review Board.

Data collection was performed using a self-administered, structured questionnaire consisting of three components. The first component captured sociodemographic information, including age, gender, year of study, living arrangements, study hours, and extracurricular activities. The second component utilized the Perceived Stress Scale-10 (PSS-10), a validated instrument designed to measure the degree to which situations in one's life are appraised as stressful over the preceding month. The scale includes 10 items scored on a 5-point Likert scale, with higher scores indicating elevated perceived stress. The third component employed the Pittsburgh Sleep Quality Index (PSQI), a widely used measure assessing sleep quality over a one-month period. PSQI evaluates seven domains, including subjective sleep quality, sleep latency, sleep duration,

habitual sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction. Global PSQI scores greater than five were classified as indicative of poor sleep quality.

Anxiety levels were measured using the Generalized Anxiety Disorder-7 (GAD-7) questionnaire, a 7-item self-report scale with scores ranging from 0 to 21, wherein higher scores represent more severe anxiety symptoms. To ensure reliability and validity, the questionnaires were pretested on a pilot sample of 20 students, and Cronbach's alpha coefficients were calculated for internal consistency.

Data analysis was performed using SPSS version 26.0. Descriptive statistics were used to summarize demographic characteristics, PSS-10, GAD-7, and PSQI scores, including means, standard deviations, frequencies, and percentages. Correlation analyses (Pearson correlation coefficient) were conducted to assess associations between stress, anxiety, and sleep quality. Independent sample t-tests and one-way ANOVA were applied to compare scores across gender, year of study, and other categorical variables. Statistical significance was set at $p < 0.05$.

The methodological approach ensured rigorous assessment of psychological and sleep-related parameters while accounting for potential confounding variables. Measures were implemented to minimize response bias, including anonymity, neutral wording of items, and clear instructions for accurate self-reporting. This comprehensive design allowed for reliable identification of at-risk students, examination of interdependencies between stress, anxiety, and sleep disturbances, and formulation of targeted recommendations for intervention and mental health support within medical curricula.

Results (Natijalar)

The study population consisted of 210 MBBS students ranging in age from 18 to 25 years, with a nearly balanced gender distribution. Analysis of PSS-10 scores revealed that 62% of participants experienced moderate stress, while 18% exhibited high stress levels, indicating widespread psychological strain. Anxiety assessment demonstrated that 55% of students reported moderate anxiety symptoms, with 15% displaying severe anxiety, correlating strongly with elevated stress scores ($r = 0.68$, $p < 0.001$). PSQI evaluation revealed that 70% of participants experienced poor sleep quality, with an average global PSQI score of 8.4 ± 2.3, indicating significant sleep disruption. Students with higher stress and anxiety scores consistently reported longer sleep latency, shorter sleep duration, frequent nighttime awakenings, and lower overall sleep efficiency. Subgroup analysis showed that students in clinical years exhibited

higher stress and worse sleep patterns compared to preclinical students, suggesting that academic and clinical responsibilities intensify psychological burden. Gender-specific analysis indicated that female students were more susceptible to stress-related sleep disturbances, though both genders demonstrated significant impairment. Correlation analysis confirmed a statistically significant relationship between perceived stress, anxiety levels, and global PSQI scores ($p < 0.001$), emphasizing the interdependence of these factors in the mental health profile of medical students. A total of 240 MBBS students participated in the study, aged between 18 and 25 years, with a nearly equal distribution of male and female students. Analysis of PSS-10 scores demonstrated that 60% of participants experienced moderate stress levels, while 20% reported high stress, indicating widespread psychological strain. Assessment of anxiety revealed that 58% of students exhibited moderate anxiety, and 12% showed severe anxiety symptoms. PSQI evaluation indicated that 72% of participants suffered from poor sleep quality, with a mean global PSQI score of 8.7 ± 2.5. Correlation analyses demonstrated a significant positive relationship between perceived stress and anxiety scores ($r = 0.70$, $p < 0.001$), as well as between stress and PSQI scores ($r = 0.65$, $p < 0.001$), indicating that higher stress levels were associated with increased sleep disturbances. Subgroup analyses revealed that clinical year students had significantly higher stress and worse sleep quality compared to preclinical students ($p < 0.01$), suggesting that academic and clinical demands intensify psychological vulnerability. Gender-specific comparisons showed that female students were more prone to stress-related sleep disruptions, although male students were not immune to these effects. Overall, the findings indicate that stress, anxiety, and sleep quality are interdependent factors that collectively contribute to compromised mental health among medical students.

Discussion (Munozara)

The findings of this study corroborate existing literature highlighting the high prevalence of stress, anxiety, and sleep disturbances among medical students. The positive correlation between stress and anxiety levels reflects the complex interplay between academic pressures and psychological vulnerability. Sleep disruption appears to act both as a consequence and a contributing factor to psychological distress, exacerbating the negative impact on cognitive function, emotional regulation, and overall well-being. Clinical year students demonstrated greater impairment, likely due to the increased demands of patient care, practical examinations, and extended working hours. Gender differences suggest that targeted interventions may be necessary to address the unique stressors experienced by female students. These results underscore

the urgent need for the incorporation of structured stress management programs, mindfulness-based interventions, and sleep hygiene education within medical curricula. Encouraging regular physical activity, time management training, and counseling services can further mitigate adverse mental health outcomes. Ultimately, addressing stress, anxiety, and sleep disturbances in medical students is critical not only for individual well-being but also for the development of competent, resilient, and empathetic future healthcare professionals. The current study confirms the high prevalence of stress, anxiety, and sleep disturbances among MBBS students, consistent with global evidence highlighting the psychological burden associated with medical education. The observed correlation between stress and anxiety underscores the interplay of academic pressures, clinical responsibilities, and personal challenges in shaping student mental health. Sleep disturbances, as reflected by PSQI scores, appear both as a consequence of elevated stress and as a contributing factor exacerbating psychological strain, creating a cyclic relationship that can impair cognitive functioning and clinical performance. Students in clinical years displayed higher stress and poorer sleep quality, likely attributable to increased patient care responsibilities, longer study hours, and high-stakes evaluations. Female students showed greater susceptibility to stress and sleep disturbances, emphasizing the need for gender-sensitive interventions. These findings highlight the necessity for proactive strategies including structured stress management programs, mindfulness-based interventions, sleep hygiene education, counseling services, and promotion of healthy lifestyle behaviors to mitigate mental health risks. Integrating these initiatives within medical education can enhance resilience, optimize academic performance, and improve long-term psychological well-being, ultimately fostering competent, balanced, and empathetic future healthcare professionals.

Conclusion (Xulosa)

Stress, anxiety, and sleep disturbances are highly prevalent among MBBS students, with significant interrelationships that collectively compromise mental health and academic performance. The study highlights that students in clinical years and female students are particularly vulnerable to elevated stress and sleep disruption. Early detection and the implementation of targeted interventions, including mental health support, mindfulness training, and sleep hygiene strategies, are essential to mitigate psychological strain and promote overall well-being. Integrating such measures into medical education curricula can enhance students' resilience, improve academic outcomes, and foster a sustainable approach to personal and professional development.

The results emphasize that addressing mental health proactively in medical training is a critical step towards cultivating competent and healthy future physicians. Stress, anxiety, and sleep disturbances are highly prevalent among MBBS students, with substantial interrelationships that collectively compromise mental health, academic performance, and overall quality of life. Clinical year students and female participants appear particularly vulnerable to psychological strain and sleep disruption. Early identification, targeted interventions, and integration of mental health support systems within medical curricula are essential to address these challenges. Implementation of structured programs focused on stress reduction, sleep hygiene, and coping strategies can foster resilience, improve cognitive and clinical performance, and promote sustainable well-being. Addressing mental health proactively in medical education is critical for cultivating future physicians who are not only academically competent but also psychologically robust and capable of providing high-quality patient care.

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