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EXAM ANXIETY AND ITS ASSOCIATED FACTORS AMONG MEDICAL STUDENTS IN MODULAR VS. TRADITIONAL CURRICULA

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ABSTRACT

Background: The occurrence of exam anxiety in medical education is a common concern, during a time period especially when medical institutions are shifting from a traditional discipline-based curricular to an integrated modular curricular. Though these reforms are aimed at improving learning, their impact on student psychology particularly in pressured Asian countries remains to be inadequately recognized.

Objective: The present study was conducted for determination towards prevalence of exam anxiety among 533 MBBS students at Lahore Medical & Dental College, evaluating the experiences among the traditional & integrated modular curriculum cohorts and identification of significant contributing variables.

Methods: It is a cross-sectional study involving medical students from first- to fifth-year who filled in a formerly validated 40-item questionnaire that assessed attitudinal symptoms, study routine, curriculum understanding, and peer pressure.

Results: Significant percentage accounting to 99.81 students disclosed nervousness before exam & difficulty in concentration endorsing, that exam anxiety is a common phenomenon. Students experienced significant physiological symptoms—shakiness ($\chi^2 = 80.700$, $p < 0.001$) and racing heartbeat ($\chi^2 = 73.322$, $p < 0.001$)—alongside cognitive disruption. The fear of failing persisted even among the prime students ($\chi^2 = 52.457$, $p < 0.001$), though procrastination which was motivated by panic of not comprehending syllabus did emerge as an important demeanor ($\chi^2 = 59.654$, $p < 0.001$). Having a structured curriculum proved important: while persistent evaluations increased strain ($\chi^2 = 15.784$, $p < 0.001$), whereas predictable curricula offered protection ($\chi^2 = 12.127$, $p < 0.001$). Access to counsel didn't show any significant association with reduction in anxiety.

Conclusion: Our findings suggest that the existence of exam anxiety amid the medical students of Pakistan portrayed a systemic dilemma that extended beyond typical educational strain. The ubiquitous occurrence and crucial features required an immediate response from the institutions which saw past the fact that anxiety was an individual weakness towards the formation & integration of profound well-being programs and having access to mental health services along with designing of sound curriculum.

KEYWORDS: Exam anxiety, medical education, modular curriculum, traditional curriculum, psychological distress, academic stress, Pakistan

INTRODUCTION

Exam anxiety is a combination of behaviors consisting commonly of despair, excessive and pointless thinking, jitteriness and uncontrollable concern, turning out from an individual in response to a set of stimuli arising from evaluation/test and result experience. Many students either exhibit or have exam anxiety as they are undergoing through the examination procedure. Exam anxiety is caused due to four primary sources of stress, that includes a deficiency of required content, life concerns, style of learning, and stress induced factors (Hashmat et al., 2008; Memon et al., 2023).

Medical education in South Asia faces many hurdles. Being selected in a medical college is itself very competitive. Past studies in Pakistan have shown that many individuals face high levels of anxiety (Hashmat et al., 2008; Ali et al., 2015; Williamson et al., 2024). However, there haven't been enough studies on different factors that may lead to anxiety, such as physiological symptoms, thinking habits, and study practices.

Transitioning from traditional based curricula towards integrated modular approach highlights a substantial tectonic transformation. While modular system aims to enhance retentiveness through continuous assessment and problem-based learning, they may introduce novel stressors through frequent evaluations, partitioned study

schedules, and diminished curricular predictability (Ali et al., 2019; Janjua et al., 2022; Saeed et al., 2024). Our study investigates exam anxiety prevalence and its multifaceted correlates at Lahore Medical & Dental College, comparing modular and traditional cohorts to inform context-appropriate interventions.

MATERIALS AND METHODS

This was a descriptive and cross-sectional study conducted on students from 1st year to 5th year MBBS students enrolled at a private medical college in Lahore, Pakistan. Before data collection, proposal of this study was presented to the Ethical Review Board (ERB) of the medical college for ethical approval. After receiving ethical approval data collection was commenced. The medical college is composed of varied student populace and offered both traditional annual-based and combined modular structure, which facilitated in permitting comparative evaluation. An earlier validated 40-item questionnaire formulated by Lotfi F. Issa et al was utilized. Questionnaire consisted of four divisions: (I) population statistics; (II) learning strategies (III) physical, mental, and rational symptoms; and (IV) syllabus understanding and familial expectations.

Statistical Analysis

Completed questionnaire was collected and reviewed before entering in SPSS version 26 for analyzation. Sociodemographic characteristics and the incidence of anxiety was condensed by descriptive statistics. Affiliation between nervousness in exams and 36 indicator variables were quired by Chi-square trails. Statistical significance was set at $p \leq 0.05$.

Ethical Considerations

Research project was approved by Ethical Review Board (ERB). Informed verbal consent was provided by all participants. Collected data was kept confidential.

RESULTS

A startling number of subjects accounting to 99.81% (531/533) disclosed that they felt nervous along with the inability to focus when the examinations approached nearer. The widespread occurrence indicated that medical ecosystem is basically anxiety-triggering, where the stress of failure, extensive syllabus, and family demands affect a lot.

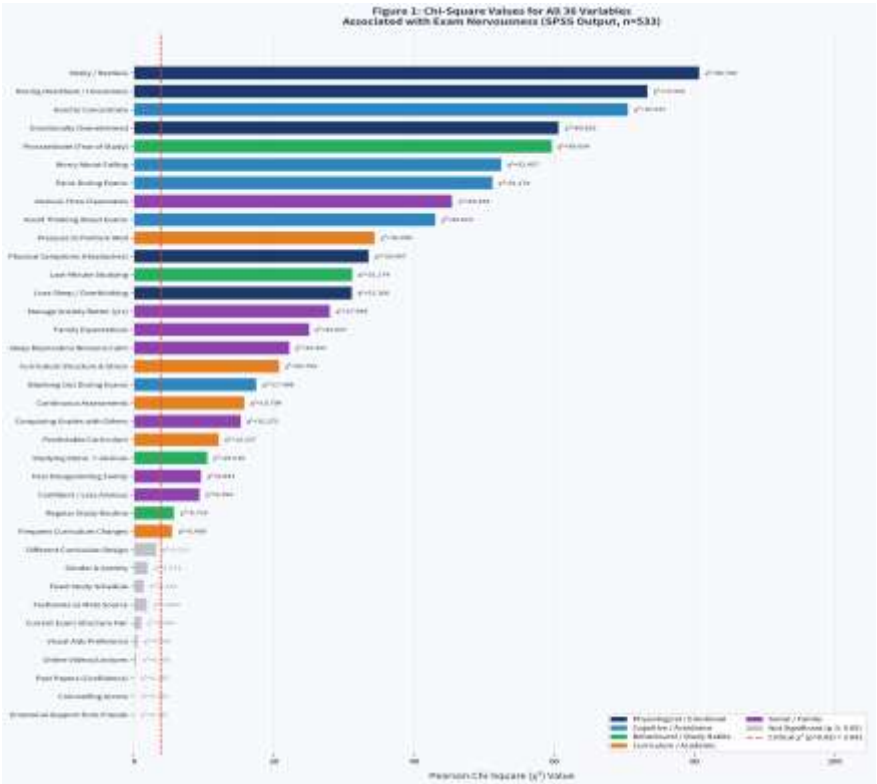

Figure 1. Chi-square (χ^2) values for all 36 variables crossed with exam nervousness (Participants, n=533). Colour-coded by domain: dark blue = physiological/emotional; medium blue = cognitive/avoidance; green = behavioral/study habits; orange = curriculum/academic; purple = social/family; grey = not significant ($p \geq 0.05$). Red dashed line = critical χ^2 value (df=1, p=0.05) = 3.841.

Strong statistically significant associations emerged between nervousness and symptoms of physiological activation: shakiness/restlessness ($\chi^2 = 80.700$, $p < 0.001$), racing heartbeat/physical uneasiness ($\chi^2 = 73.322$, $p < 0.001$), and emotional overwhelm ($\chi^2 = 60.625$, $p < 0.001$). These robust associations (all $\chi^2 > 60$) demonstrate exam anxiety manifests as an integrated syndrome where emotional distress triggers physiological dysregulation, creating intensifying feedback loops.

The physical attributes such as headache, stomach pain ($\chi^2 = 33.497$, $p < 0.001$) along with sleep irregularities ($\chi^2 = 31.106$, $p < 0.001$) closely linked to anxiety. Sleep irregularities worsened the ability of the students to remain

calm was acknowledged by them ($\chi^2 = 22.201$, $p < 0.001$), emphasizing the repetitive patterns from anxiety to sleep worsening to decreased management & ending with increased anxiety. Investigative effects were consequent. Mental distractions that were caused by hurdles in concentration ranked third amongst other factors ($\chi^2 = 70.537$, $p < 0.001$). Black outs and memory recall disruptions due to anxiety occurring in examinations offered strong fact ($\chi^2 = 17.496$, $p < 0.001$).

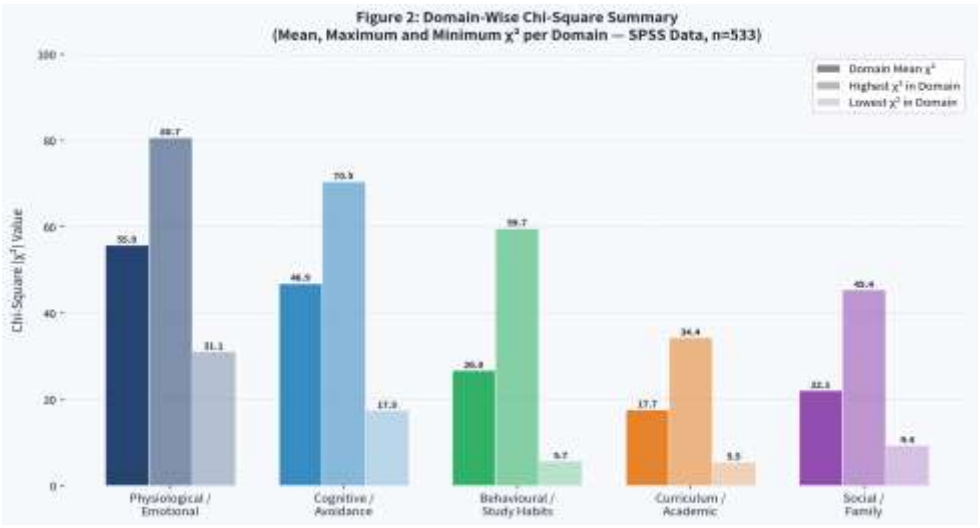

Figure 2. Domain-wise summary of chi-square values: mean, maximum, and minimum χ^2 per domain (SPSS data, n=533). Physiological/Emotional and Cognitive/Avoidance domains show the highest mean associations with exam nervousness, confirming these as the most impactful symptom clusters.

Procrastination due to panic emerged as fifth significant factor ($\chi^2 = 59.654$, $p < 0.001$, $\varphi = 0.335$), suggested that voluntary delay manifested through delay related to fright. Commencing studies mere days before the exams ($\chi^2 = 31.174$, $p < 0.001$) implied a relationship that was bidirectional indicating that delay was caused due to anxiety, which lead to creation of immense stress which intensified anxiety.

Common study practices revealed subtle association ($\chi^2 = 5.733$, $p = 0.017$, $\varphi = -0.104$). A negative phi signified a moderate advantage and with systemic preparation may reduce but doesn't avoid vulnerability in fast-paced settings.

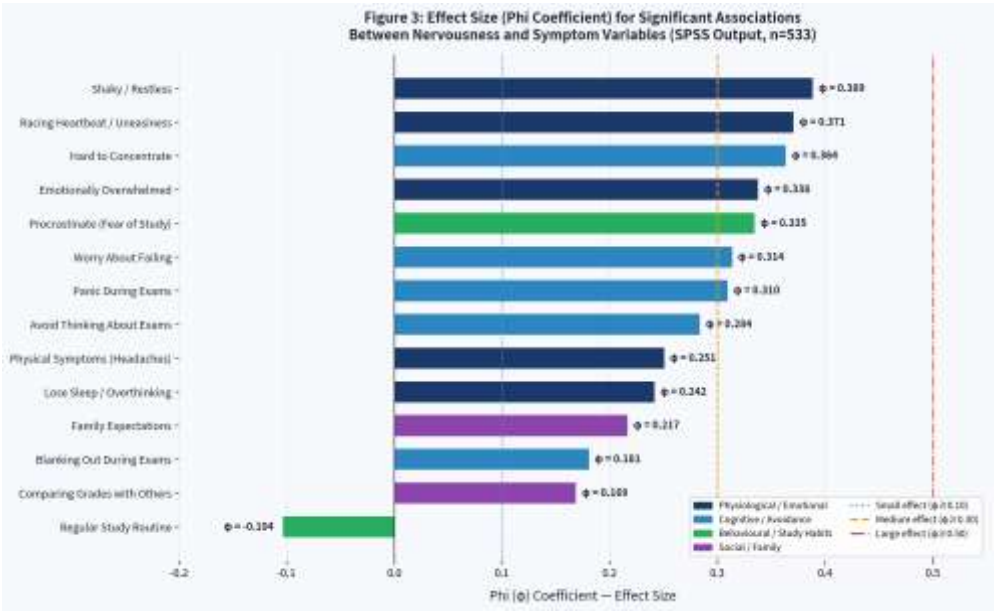

Figure 3. Effect size (Phi coefficient, φ) for all statistically significant associations between exam nervousness and symptom variables (SPSS Output, n=533). Positive φ = risk factor; negative φ = protective factor (regular study routine). Reference lines: small (φ≥0.10), medium (φ≥0.30), large (φ≥0.50) effect thresholds. Seven variables exceed the medium effect threshold.

Social comparison significantly amplified anxiety: feeling more anxious than classmates ($\chi^2 = 45.434$, $p < 0.001$), family expectations ($\chi^2 = 25.037$, $p < 0.001$, $\varphi = 0.217$), fear of disappointing family/teachers ($\chi^2 = 9.623$, $p = 0.002$), and comparing grades with others ($\chi^2 = 15.273$, $p < 0.001$).

In contrast, students who disclosed better management of anxiety than in previous years ($\chi^2 = 27.999$, $p < 0.001$) and had elevated amount of confidence with ascension ($\chi^2 = 9.393$, $p = 0.002$) displayed vital associations suggested that experience tendered partial fortitude regardless of high stress lifestyle.

The manner in which curriculum is designed markedly influenced anxiety: pressure from curriculum requirements ($\chi^2 = 34.359$, $p < 0.001$), realization that curriculum structure affects stress ($\chi^2 = 20.754$, $p < 0.001$), continuous assessments increased pressure ($\chi^2 = 15.784$, $p < 0.001$), and regular curriculum altercations added to nervousness ($\chi^2 = 5.490$, $p = 0.019$). Expected curricula was linked with reduced nervousness ($\chi^2 = 12.127$, $p < 0.001$), suggesting that predictability reduced anxiety.

No important associations were found for: relying on textbooks ($p = 0.170$), online videos/recorded lectures ($p = 0.528$), fixed study schedules ($p = 0.233$), practicing past papers ($p = 0.706$), using visual aids ($p = 0.445$), emotional support from friends ($p = 0.722$), gender ($p = 0.160$), or having access to counseling services ($p = 0.694$). The last point is particularly important, indicating current support services are not used enough, difficult to reach or aren't beneficial.

DISCUSSION

The 99.81% occurrence of exam-related anxiety highlighted that students feeling anxious about exams is a widespread factor involving everyone, and is not limited to just a few individuals. This has surpassed the reports from around the globe. Tsegay et al. (2019) discovered that prevalence of problematic test anxiety in Ethiopian students accounted to 52.30%. Almutairi et al. (2024) uncovered that highest prevalence of anxiety in Saudi Arabia contributed to only 21.5%. Saeed et al. (2024) reported high anxiety prevalence among medical students in a modular curriculum in Pakistan. The setting of students from Pakistani unveiled elevated levels of anxiety. Hashmat et al. (2008) also noted widespread occurrences, while Memon et al. (2023) and Janjua et al. (2022) supported the thought of structured instead of purely an establishment-based outcome.

The convergence of physiological imbalance ($\chi^2 = 80.700$), rational impairment ($\chi^2 = 70.537$), and freighting procrastination ($\chi^2 = 59.654$) have emerged as three most extremely striking behavioral indicators which implied, students were working underneath clinically substantial agony. These outcome of the results harmonized with Almutairi et al.'s identification of physiological/sentimental constituents in test anxiety, Tsegay et al.'s 47.7% emotional distress classification, and neurological research on cortisol induced anxiety that affected hippocampal memory recovery (Alezzi et al., 2024).

The documented sleep-anxiety-performance triad showed that over thinking resulted in sleep loss ($\chi^2 = 31.106$) along with impaired calmness ($\chi^2 = 22.201$) is echoed by Al Doori et al. (2024), who discovered that anxiety related to USMLE significantly disrupted sleep quality and working memory. Ansari et al. (2025) likewise illustrated the negative impact of sleep deprivation adverse effects on cognitive abilities and emotional stability.

Interchangeable cycle of procrastination anxiety ($\chi^2 = 59.654$) aligned with qualitative research that was conducted by Khan et al.'s (2025) on "procrastination epidemic" that existed amid the medical students of Pakistan, describing it as the presence of transient cycle of guilt stress in which anxiety consequently directed to evasion, initiating guilt that lead to intensify anxiety.

Social dimensions corresponded with Almutairi et al. (2024), who discovered that inadequate social support prominent indicator for high test anxiety (OR = 2.56), and Tsegay et al. (2019), who showed that insufficient support nearly tripled the odds (AOR = 3.6). Hashmat et al. (2008) found family pressure and social comparisons as significant driving forces in Pakistan, consistently present for almost twenty years. Our discovery that ongoing evaluations heightened pressure ($\chi^2 = 15.784$) and that the structure of curriculum had a direct impact on anxiety ($\chi^2 = 20.754$) contributes to the discussion between modular and traditional approaches. Ali et al. (2019) found significant associations between depression, anxiety, and stress across modular, semester, and annual examination systems among medical students in Pakistan. Mehboob et al. (2023) discovered that dental students in modular systems exhibited considerably greater depression ($P = 0.02$) and anxiety ($P = 0.01$) in comparison to those in traditional systems calling into question the belief that modular curricula are naturally more accommodating towards students. In contrast, Muddassir et al. (2025) discovered that students in traditional system faced greater academic stress (14% compared to 1%; $p < 0.001$). Zuardi et al. (2008) suggested that voluntary, and complete coursework modifications caused reduction in anxiety, which implied that standard of practicing, instead of simply fostering a modular culture, credited adequate results.

Intricacies of evaluation introduced a supplementary component. Wadi et al. (2022) established that OSCEs both long and short cases were the formats which constituted majority of anxiety (mean scores 7.9–7.7/10), considering that Problem-Based Learning evaluation caused minimum anxiety (mean 5.0). Modular courses usually merge more OSCEs and formalized clinical assessments, that increased anxiety due to layouts that uphold authentic learning.

Limitations

This study must be interpreted in light of few limitations. Though with presence of anomalies in statistical findings because of remarkably decreased cell counts due to 99.81% negative responses in a prevalence rate, the steadiness and substantial sample size assisted substantially to robustness of the results. Though cross-sectional research limited cross-variable interferences, availability sampling could have yielded in partiality, however an elevated proportion may indicate that the respondents state truth.

CONCLUSION

The findings of this study suggested that prevalence of anxiety related to exam in medical students of Pakistan is a familiar occurrence characterizing their environment of study. The analysis of 36 factors showed 26 considerable affiliations via physiological, rational, behavioral and syllabus-related. Notably a 99.81% existence and

substantial merging of symptom, medical institutions require evolution from amid acknowledging to establishment to valuable backing via workshops for anxiety management, student accredited counsel solutions, and the training of the faculty in recognizing severe anxiety.

Course creators will have to find equilibrium between challenge and wellness by reassessment of periodicity, importance and structure. Research findings from Zuardi et al. (2008) and Muddassir et al. (2025) indicating that considerate curricular modifications can steer towards remarkable reduction in levels of anxiety. Comprehending, the complicated, institutional phases of exam anxiety would be the first step towards the creation of a study ecosystem which would yield not mere well-informed practitioners, but also highly enduring and stable people.

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