ORIGINAL ARTICLE

FACTORS CONTRIBUTING TO EXAMINATION ANXIETY AND THEIR ASSOCIATION WITH GENDER AMONG UNDERGRADUATE MEDICAL AND DENTAL STUDENTS: A CROSS-SECTIONAL STUDY AT A PUBLIC SECTOR UNIVERSITY IN KARACHI, PAKISTAN

Hina Shah[1], Ifrah Urooj[2], Izma Arif Muqri[2], Aqsa Mubasher[2], Khansa Kanwal[2], Dua Ayoub[2]

[1]Department of Community and Preventive Dentistry, Sindh Institute of Oral Health Sciences, Jinnah Sindh Medical University, Karachi, Pakistan

[2]Sindh Institute of Oral Health Sciences, Jinnah Sindh Medical University, Karachi, Pakistan

ABSTRACT

Objectives: To evaluate the factors contributing to examination anxiety among undergraduate medical and dental students at Sindh Medical College (SMC) and Sindh Institute of Oral and Health Sciences (SIOHS), Jinnah Sindh Medical University (JSMU), and to determine their association with gender.

Materials & Methods: A cross-sectional study was conducted at SMC and SIOHS, JSMU, over a period of 3 months, after approval from the Institutional Review Board (reference no. JSMU/IRB/2025/1070). Data were collected using a modified, structured, pretested, and validated questionnaire and analyzed using IBM SPSS 27. The overall response rate was 90.7%. Descriptive analysis was used for categorical variables. A chi-square test was used to evaluate the association between factors contributing to examination anxiety and gender. A P value of less than 0.05 was considered statistically significant.

Results: A total of 322 participants responded, of whom 207 were female and 115 were male. Factors associated with gender included sufficient time for exam preparation (p=0.022), staying up overnight before the exam (p=0.006), dietary habits during exams (p=0.041), difficulty understanding medical/dental terminology (p=0.008), insufficient time for revision (p=0.001), limited library resources (p=0.046), and difficulty understanding lectures in English (p=0.03).

Conclusion: Examination anxiety among medical and dental students is influenced by many factors. Addressing these factors through supportive strategies and targeted interventions may improve student well-being, performance, and academic experience.

Keywords: Test Anxiety, Medical Students, Dental Students

This article may be cited as: Shah H, Urooj I, Muqri IA, Mubasher A, Kanwal K, Ayoub D. Factors Contributing To Examination Anxiety And Their Association With Gender Among Undergraduate Medical And Dental Students: A Cross-Sectional Study At A Public Sector University In Karachi, Pakistan. J Med Sci 2026 April - June;34(2):104-109

INTRODUCTION

Examination anxiety refers to a state of psychological distress experienced before or during examinations, characterized by physical, cognitive, emotional, and behavioral symptoms such as tachycardia, insomnia, headaches, negative thoughts, social withdrawal, and impaired concentration. [1, 2] Previous studies reveal the prevalence of medical students experiencing some level of exam-related anxiety to be 33.33%. [3]

Medical education requires extensive training, which includes study, research, learning, and evaluation. Unlike students in other fields, medical students are required to memorize extensive information and are rigorously tested, which affects their cognitive status. [4, 5] Studies have shown that many medical students lack adequate awareness of effective examination-preparation techniques and anxiety-management strategies. Even among those who are aware of such approaches, implementation during examinations remains limited. [6]

Examinations are overwhelming for students, but they should motivate them to become qualified doctors and to test their ability to pursue medicine. [7, 8] Some studies suggest that extensive course content, ineffective study methods, and complex examination formats, such

Correspondence
Dr. Hina Shah
Associate Professor
Department of Community and Preventive Dentistry,
Sindh Institute of Oral Health Sciences, Jinnah Sindh Medical University, Karachi, Pakistan
Email: dr.hina95@yahoo.com
Cell: +92-315-8750511
Date Received: 13/04/2026
Date Revised: 26/06/2026
Date Accepted: 26/06/2026

as the Objective Structured Clinical Examination (OSCE), may contribute to anxiety among medical students. [9]

There are four main domains of exam anxiety, including life challenges, lack of academic resources, mental well-being, and learning patterns. [10] Experts have indicated that lifestyle-related issues such as poor sleep quality, inadequate physical activity, lack of appetite, and poor time management are also linked to exam anxiety. [11] Additional factors include the burden of the curriculum, lack of support, poor self-confidence, inability to self-study, and overly critical self-standards. [12] Addressing these factors can reduce students' anxiety levels, improve their academic performance, and ultimately improve the quality of patient care they provide in clinical practice. [13]

While a certain level of anxiety is normal, it is crucial to remain mentally and physically alert to stay motivated during exams. [14] However, extreme anxiety, such as negative thoughts about exams, can inhibit a student's ability to manage nervous responses during exams. [15] Studies show that students with high exam anxiety have lower grades than those with low exam anxiety. [16] According to Putwain et al. (2023), the fear of failing to meet one's own and others' expectations creates a sense of inadequacy and anxiety. [17]

While exams are essential in medical and dental education, students often face stressors such as limited clinical exposure and the transition to online learning, which may contribute to increased anxiety. [18] The underlying factors contributing to examination anxiety remain unclear, as previous studies have been unable to identify them. To address this knowledge gap, especially within the local context where limited research exists, a cross-sectional study was conducted to evaluate the factors contributing to examination anxiety among undergraduate medical and dental students of Sindh Medical College (SMC) and Sindh Institute of Oral and Health Sciences (SIOHS), Jinnah Sindh Medical University (JSMU), and to determine their association with gender. The insights gained from this study would help students in managing examination anxiety, ultimately improving their overall learning experience.

MATERIALS AND METHODS

A cross-sectional study was conducted at SMC and SIOHS, JSMU, over period of 3 months, from October 2025 to December 2025, after receiving approval from its Institutional Review Board (reference no. JSMU/IRB/2025/1070). It involved undergraduate medical and dental students from all five academic years of MBBS and all four academic years of BDS. Only participants who provided verbal and written consent were included. Participants were reassured that their responses would remain anonymous and confidential.

Medical and dental house officers, residents, and postgraduate students of JSMU were excluded because they were not a part of the undergraduate examination system. The entire teaching and non-teaching medical and dental faculty were excluded from the study because they do not undergo academic examinations.

The determination of the sample size for this study used a nonprobability convenience sampling technique. The total target population of SMC and SIOHS at JSMU was 1950. To calculate the sample size, the prevalence among medical and dental students was estimated at 50%, with a 5% margin of error and a 95% confidence level. [6] A minimum sample size of 322 participants was calculated using OpenEpi.

Data were collected using a modified structured, pre-tested questionnaire adapted from a previously validated study tool. [15] The questionnaire consisted of two parts. The first part presented demographic data on the study participants, including age, gender, year of study, socio-economic status, and marital status. The second section consisted of 19 closed-ended items rated on a five-point Likert scale and assessed factors associated with examination anxiety. [15] The questionnaire was pilot tested on 10% of the study population (approximately 35 participants) to check the clarity, reliability, and validity of questions. Cronbach's alpha was computed, where a threshold of $\alpha \geq 0.70$ was considered acceptable. Feedback from the pilot study was collected to refine the tool. Data from the pilot study were not included in the final analysis.

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) version 27. Descriptive statistics summarized categorical variables as frequencies and percentages. A chi-square test was used to assess the association between factors contributing to examination anxiety and gender. A P value less than 0.05 was considered statistically significant. [15]

RESULTS

A total of 322 participants responded. About 281 were medical students, and 41 were dental students. The mean age of the participants was 21.3 (SD = 1.6). About 64.3% (n=207) were female students, while 35.7% (n=115) were male students. Table 1 shows the demographic data of the study participants. Table 2 presents the distribution of participants by gender and the factors contributing to exam anxiety. Most female (60.4%) and male (52.2%) participants reported having an extensive course. A similar proportion of male (35.7%) and female (35.3%) students found it difficult to manage time for self-study. Nearly half of the female (47.8%) and male (44.3%) participants reported understanding English without any difficulty. The majority of females (56.5%) and males (52.2%) agreed that they knew their exam pattern. Many male (44.3%) and female (42.5%) students also reported that their studies were affected by digital distractions.

More females (29.5%) than males reported having unhealthy eating habits during their exams. Several male participants (27.1%) disagreed that the institute provided enough time for exams. The majority of female (71.5%) and male (62.6%) students reported that their institution had limited library resources. Nearly half of female (46.4%) and male (40%) students reported that they never found it difficult to understand lectures delivered in English rather than Urdu.

The last column of Table 2 shows the association between factors contributing to exam anxiety and gender. Factors that showed significant associations with gender included sufficient time for exam preparation from the institute (p=0.022), staying up all night before the exam (p=0.006), dietary habits during exams (p=0.041), difficulty understanding medical and dental terminology (p=0.008), insufficient time for revision (p=0.001), limited library resources at the institute (p=0.046), and difficulty understanding English lectures (p=0.03).

DISCUSSION

Several factors have been linked to examination anxiety, including low confidence, poor time management, stress, overnight revision, fear of failure, insufficient preparation time, a curriculum designed in a foreign language, high parental expectations, poor study habits, and a heavy academic workload. [2, 13, 15]

In this study, more than half of the participants agreed to having an extensive course load, which has been found to be a factor associated with examination anxiety among medical students in various studies. An expansive curriculum covered in a short time may contribute to examination anxiety among students, leading to poor academic performance.[2,15]

Consistent with the findings of Simran et al., the majority of students in this study (37.9%) reported having insufficient time for revision. More males reported having sufficient time for preparation than females, which is consistent with other studies showing that insufficient preparation time is linked to examination anxiety among females. [13]

A significant percentage of participants in this study reported that limited library space affected their studies, a concern more commonly associated with female participants. This finding is significant because studying in libraries was positively associated with better academic performance in a study conducted in Peshawar. [19, 20]

Participants showed mixed responses when asked about the allocated time for completing exams. More males than females disagreed that they had sufficient time to complete their exams. Although evidence within the literature is limited, studies have linked poor time management during exams to higher exam anxiety. [2]

Table No 1: DEMOGRAPHIC DATA OF STUDY PARTICIPANTS

VARIABLES	FREQUENCIES (%)
Age	
Mean (SD)	21.3 (1.6)
Gender	
Male	115 (35.7)
Female	207 (64.3)
Marital status	
Single	316 (98.1)
Married	6 (1.9)
Institute	
SMC	281 (87.3)
SIOHS	41 (12.7)
Academic year	
1st year	57 (17.7)
2nd year	69 (21.4)
3rd year	69 (21.4)
4th year	62 (19.3)
5th year	65 (20.2)
Mother's education	
Uneducated	15 (4.7)
Primary	15 (4.7)
Secondary	22 (6.8)
Higher Secondary	70 (21.7)
Bachelors	129 (40.1)
Master	66 (20.5)
PHD	5 (1.6)
Mother's occupation	
Non-working	252 (78.3)
Working	70 (21.7)
Father's education	
Uneducated	3 (0.9)
Primary	9 (2.8)
Secondary	15 (4.7)
Higher Secondary	60 (18.6)
Bachelors	117 (36.3)
Master	107 (33.2)
PHD	11 (3.4)
Family income per month	
Mean (SD)	143462.7 (134709.1)
Family size	
Mean (SD)	5.8 (2.0)
Living area	
Urban	306 (95.0)
Rural	16 (5.0)

Table No 2:FACTORS CONTRIBUTING TO EXAMINATION ANXIETY AND THEIR ASSOCIATION WITH GENDER

Factors	Gender (%)	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	P-value
Do you think your academic course is very extensive?	Male	60 (52.2)	35 (30.4)	16 (13.9)	4 (3.5)	0 (0.0)	0.286
	Female	125 (60.4)	58 (20.0)	15 (7.2)	8 (3.9)	1 (0.5)	
Do you have sufficient time for revision before the exam?	Male	7 (6.1)	21 (18.3)	25 (21.7)	38 (33.0)	24 (28.9)	0.001*
	Female	0 (0.0)	25 (12.1)	39 (18.8)	84 (40.6)	59 (28.5)	
Do you find it easy to manage your time for self-study?	Male	6 (5.2)	21 (18.3)	29 (25.2)	41 (35.7)	18 (15.7)	0.091
	Female	3(1.4)	24 (11.6)	63 (30.4)	73 (35.3)	44 (21.3)	
Do you feel pressured by your parents' expectations?	Male	15 (13.0)	21 (18.3)	33 (28.7)	30 (26.1)	16 (13.9)	0.525
	Female	20 (9.7)	42 (20.3)	50 (24.2)	53 (25.6)	42 (20.0)	
Do you easily recall and review lessons before exams?	Male	4 (3.5)	38 (33.0)	28 (24.3)	33 (28.7)	12 (10.4)	0.075
	Female	3(1.4)	43 (20.8)	69 (33.3)	64 (30.9)	28 (13.5)	
Do you often worry about failing exams?	Male	24(20.9)	34 (29.6)	24 (20.9)	20 (17.4)	13(11.3)	0.059
	Female	72 (34.8)	49 (23.7)	44 (21.3)	30 (14.5)	12 (5.8)	
Do you find it difficult to understand the course in English?	Male	4 (3.5)	11 (9.6)	13 (11.3)	36 (31.3)	51 (44.3)	0.131
	Female	5 (2.4)	6 (2.9)	28 (13.5)	69 (33.3)	99(47.8)	
Do you know about the pattern of exams?	Male	20 (17.4)	60 (52.2)	19 (16.5)	12 (10.4)	4 (3.5)	0.233
	Female	37 (17.9)	117 (56.5)	36 (17.4)	8 (3.9)	9 (4.3)	
Do you often stay up all night before an exam?	Male	25 (21.7)	35 (30.4)	11 (9.6)	24 (20.9)	20 (17.4)	0.006*
	Female	70 (33.8)	48 (23.2)	38 (18.4)	32 (15.5)	19 (9.2)	
Do digital distractions (e.g. social media, mobile, etc.) interfere with your studies?	Male	51 (44.3)	36 (31.3)	18 (15.7)	7 (6.1)	3 (2.6)	0.958
	Female	88 (42.5)	70 (33.8)	35 (16.9)	10 (4.8)	4 (1.9)	
Do you maintain a healthy diet during exams?	Male	11 (9.6)	31 (27.0)	37 (32.2)	25 (21.7)	11 (9.6)	0.04 *
	Female	9 (4.3)	46 (22.2)	54 (26.1)	61 (29.5)	37 (17.9)	
Do you feel pressure to get higher marks from top students?	Male	15 (13.0)	32 (27.8)	29 (25.2)	25 (21.7)	14 (12.2)	0.588
	Female	37 (33.4)	62 (30.0)	53 (25.6)	38 (18.4)	17 (8.2)	
Do you find it difficult to understand medical/dental terminology?	Male	6 (5.2)	24 (20.9)	21 (18.3)	36 (31.3)	28 (24.3)	0.00 *
	Female	10 (4.8)	24 (11.6)	71 (34.3)	69 (33.3)	33 (15.9)	
Does the institute provide you with sufficient time to complete your exams?	Male	13 (11.3)	24 (20.9)	30 (26.1)	31 (27.0)	17 (14.8)	
	Female	21 (10.1)	56 (27.1)	38 (18.4)	36 (17.4)	56(27.1)	0.022*
Do you rely on rote memorization instead of understanding concepts?	Male	11 (9.6)	21 (18.3)	25 (21.7)	38 (33.0)	20 (17.4)	
	Female	10 (4.8)	26 (12.6)	66 (31.9)	65 (31.4)	40 (19.3)	0.131
Do you feel that limited library space or study resources at your institute affects your exam preparation?	Male	72 (62.6)	20 (17.4)	9 (7.8)	7 (6.1)	7 (6.1)	
	Female	148 (71.5)	34 (16.4)	17 (8.2)	6 (2.9)	2 (1.0)	0.046*
Does living in a joint family environment make it difficult for you to study for exams?	Male	15 (13.0)	25 (21.4)	32 (27.8)	22 (19.1)	21 (18.3)	
	Female	40 (19.3)	35 (16.9)	78 (37.7)	24 (11.6)	30 (14.5)	0.08
Do you feel pressure to perform well in exams because of financial sacrifices made by your parents?	Male	21 (18.3)	28 (24.3)	37 (32.2)	20 (17.4)	9 (7.8)	
	Female	33 (15.9)	47 (22.7)	72 (34.8)	31 (15.0)	24 (11.6)	0.778
Do you face difficulty in understanding lecture material when it is delivered in English rather than Urdu?	Male	10 (8.7)	4 (3.5)	25 (21.7)	30 (26.1)	46 (40.0)	
	Female	4 (1.9)	12 (5.8)	34 (16.4)	61 (29.5)	96 (46.4)	0.03*

*Statically significant

Fear of failing in exams was also associated with exam anxiety in this study, a factor commonly reported among Greek medical students. [1, 16]

Most participants in the present study did not find lectures in English challenging, despite it not being their native language. This contradicts other studies in which a curriculum taught in a foreign language was associated with exam anxiety among students. [21] Participants, mostly female, reported no difficulties understanding medical or dental terminology. The results of the present study

showed that fewer students felt pressured by their family's expectations, a finding that contradicts the study by Wadi et al., which reported that most medical students felt pressured by high family expectations, thereby negatively impacting their anxiety levels. [9]

This study also demonstrated that most participants stayed awake the day before the exam to prepare, consistent with a previous study reporting that 41% of medical students studied late at night during exams. [22]

About 43.2% of participants in this study acknowledged that digital distractions interfered with their studies, a finding supported by Al-Sahman et al., who reported that 56% of students were preoccupied by distractions during study sessions. [15]

Poor dietary habits were found to be linked with anxiety and depression among students. [23] This study showed that females were more frequently unable to maintain a healthy diet during the exam period.

The cross-sectional design of this study limits the ability to establish causal relationships. Furthermore, data were collected via self-report questionnaires, which may be subject to recall bias. Third, the study was conducted among a limited population, which limits the generalizability of the findings to students at other institutions or in other regions.

CONCLUSION

Examination anxiety is common among medical and dental students and is influenced by many factors. Addressing these factors through supportive strategies and targeted interventions may improve student well-being, performance, and overall academic experience.

REFERENCES

1. Gilavand A, Moezzi M, Gilavand S. Test anxiety in dental students: a study at the Ahvaz Jundishapur University of Medical Sciences, Iran. J Res Med Dent Sci. 2019 Feb;7(1):115-20.
2. Sharma A, Singh SP, Saket S, Kushwaha P, Gahlot A. Exam anxiety and its associated risk factors among Indian medical undergraduates. Natl J Community Med. 2023 Jun;14(6):348-56.
3. Roy SK, Majumdar S, Mukherjee M, Paul A. Assessment of examination-related anxiety among students in a medical college at Kolkata, India: a cross-sectional study. J Clin Diagn Res. 2022 Oct;16(10):LC40-3.
4. Memon IA, Omair A, Barradah OM, Almegren NM, Almuqbil MM, Batarfi OH, et al. Measurement of exam anxiety levels among medical students and their association with influencing factors. Cureus. 2023 Jul 5;15(7):e41492.
5. Nazir MA, Izhar F, Talal A, Sohail ZB, Majeed A, Almas K. A quantitative study of test anxiety and its influencing factors among medical and dental students. J Taibah Univ Med Sci. 2021 Jan;16(2):253-9.
6. Almutairi AG, Baabbad NM, Alhumaidan AA, Alshahrani AM, Alabdulkarim AI, Alsughier N. Prevalence and factors causing test anxiety among medical students. Middle East Curr Psychiatry. 2024 Jun;31(1):1-8.
7. Pavithra Manisha M, Suganya M, Arun B. Evaluation of exam anxiety among health science students. Int J Res. 2019 Jan;6(9):359-63
8. Bonna AS, Sarwar AS, Nasrullah SM, Razzak KSB, Chowdhury SR, Rahman S. Exam anxiety among medical students in Dhaka City and its associated factors: a cross-sectional study. Asian J Med Health. 2022 Aug;20(11):20-30.
9. Wadi M, Yusoff MSB, Abdul Rahim AF, Lah NAZN. Factors affecting test anxiety: a qualitative analysis of medical students' views. BMC Psychol. 2022 Jan 6;10(1):1-10.
10. Rehman F, Naiyar I, Umar M, Rehman A, Shahzad A, Nisa HU. Pattern and associated factors of exam anxiety among students of a private medical college in Pakistan. Pak J Med Health Sci. 2022 Sep;14(3):669-71.
11. Shanshal AM, Hussain SA, Mahmood AM, Zukhair FA, Mahdi AS, Mahmood AM. Exam-related anxiety levels among Iraqi medical students in Baghdad City. Al-Rafidain J Med Sci. 2022 Feb;2:16-20.
12. Jirjees F, Odeh M, Al-Haddad A, Ass'ad R, Hassanin Y, Al-Obaidi H. Test anxiety and coping strategies among university students: an exploratory study in the UAE. Sci Rep. 2024 Oct;14(1):1-12.
13. Rahman I, Alam KK, Noman MU, Ahommed F, Ahmed AKS, Islam MS. Assessment of anxiety status and its impact on academic performance of undergraduate medical students of Bangladesh. Bangladesh J Med Educ. 2025 Jan 14;16(1):49–60.
14. Abdullah RD, Al-Ameri MHI. Prevalence of levels of examination anxiety among undergraduate students of the colleges of University of Thi-Qar, Iraq. Indian J Public Health Res Dev. 2019 Jan;10(10):2784-7.
15. Monicaasun MR, Narasimman P, NaveenKumar S. Immediate effect of auriculotherapy on exam anxiety among naturopathy medical students: a protocol for randomized controlled trial. Indian J Integr Med. 2025;5(1):30–35.
16. Al-Sahman LA, Al-Sahman RA, Joseph B, Javali MA. Major factors causing examination anxiety in undergraduate dental students: a questionnaire-based cross-sectional study. Ann Med Health Sci Res. 2019;9(6):691–4.
17. Zhang D, Mushtaque I, Hanif MW. Exploring the role of perfectionism and psychological capital in the relationship between academic procrastination, test anxiety and suicidal ideation among pre-medical students. Acta Psychol (Amst). 2024;252:104662.
18. Abdulghani HM, Sattar K, Ahmad T, Akram A. Association of COVID-19 pandemic with undergraduate medical students' perceived stress and coping. Psychol Res Behav Manag. 2020; 13:871–81. doi:10.2147/PRBM.S2769
19. Cui X, Ahn C. The Mediating role of space satisfaction in enhancing learning outcomes: A Study of university library learning spaces and informal learning needs. International Journal of Sustainable Building Technology and Urban Development. 2024;15(4):545-562.

20. Osama M, Saeed A, Raza ul Haq M, Baseer MA. Academic excellence: A comprehensive investigation of medical students study habits, strategies, and sources in medical colleges of Peshawar, Pakistan. Pak J Med Sci. 2024;40(11):2594-2599.

21. Gondal HM, Afzal R, Masood A, Din MBMU, Ahmed A, Iqbal U. Causes of academic stress and coping strategies among undergraduate medical students in Pakistan. J Coll Physicians Surg Pak. 2025;35(2):174–9.

22. Alotaibi AD, Alosaimi FM, Alajlan AA, Bin Abdulrahman KA. The relationship between sleep quality, stress, and academic performance among medical students. J Fam Community Med 2020;27(1):23-8.

23. Shafiq I, Jalal K, Fatima R, Javed A, Waheed W, Batool S, Khan MA, Fatima M, Gaffar T. Mental Health and Nutrition: A Study on the role of Anxiety and Depression in Eating Habits in College Students. Journal of Health and Rehabilitation Research. 2024;4(3).

CONFLICT OF INTEREST: Authors declare no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE: NIL

Authors Contribution:

Following authors have made substantial contributions to the manuscript as under

Authors	Conceived & designed the analysis	Collected the data	Contributed data or analysis tools	Performed the analysis	Wrote the paper	Other contribution
Shah H	✓	✓	×	×	✓	×
Urooj I	✓	×	✓	✓	✓	×
Muqri IA	✓	✓	×	×	×	✓
Mubasher A	✓	×	✓	✓	✓	×
Kanwal K	✓	✓	×	×	×	✓
Ayoub D	✓	×	✓	✓	✓	×

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Ethical Approval:

This Manuscript was approved by the Ethical Review Board of Jinnah Sindh Medical University. Vide No. JSMU/IRB/2025/1070. Dated: 22 10 2025