

## Original Article

# Anxiety Disorders and Nicotine Use among Undergraduate Students of Public Sector Medical University: A Cross-Sectional Study

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<sup>1</sup>Conception of study

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## Abstract

**Introduction:** Anxiety disorders represent the most common mental health issue across many countries and multiple studies have shown that rates of smoking and nicotine practices are increased in individuals with anxiety disorders.

**Objectives:** The objectives of our study are to evaluate the prevalence of nicotine use, the association between nicotine practices and anxiety levels as well as various anxiety disorders among medical students at Rawalpindi Medical University.

**Materials and Methods:** A descriptive cross-sectional study involved 232 participants. Participants were selected through a non-probability convenient sampling technique and data was collected through a printed self-administered questionnaire and Hamilton, K10, DAAS scales. The responses were recorded, and data was analyzed.

**Results:** Of the 232 participants, 43(29.1%) of males reported nicotine use, while no female was involved in nicotine practices. Nicotine consumption was not substantially correlated with age. Compared to non-users, who reported 2.1% and 28.6% anxiety, nicotine users reported higher levels of anxiety, with 65.5% reporting moderate anxiety and 9.3% reporting severe anxiety. Anxiety disorders like fears, insomnia, intellectual difficulties, and depression were significantly associated with nicotine use. Other anxiety disorders showed no significant association.

**Conclusion:** The study identifies a significant association between nicotine practices and anxiety levels as well as various anxiety disorders.

**Keywords:** Anxiety, nicotine, disorders, health, students, smoking

## Introduction

Anxiety disorders are biopsychosocial problems linked to responses to perceived threats that might be situation-specific or generalized.<sup>1</sup> Anxiety disorders affect a large number of people and have serious negative effects.<sup>2</sup> The World Health Organization's (WHO) study on global tobacco usage trends recently stated that, despite significant declines in prevalence, smoking remains one of the top causes of morbidity and mortality worldwide.<sup>3</sup> It is estimated that more than 8 million people die every year as a direct or indirect result of smoking.<sup>4</sup> Further studies have shown that most of the population that is involved in nicotine practices is that of youth.

Medical school is widely acknowledged as a demanding atmosphere that negatively impacts students' academic achievement, physical health, and psycho-social well-being.<sup>5</sup> Consequently, when compared to students in other fields, medical students and resident doctors are known to have significant rates of psychological morbidity.<sup>6</sup> According to an international review, nicotine practice rates among male medical students range from 3% in the USA to 58% in Japan. In the French general population, almost one in five medical students smoke, of which 3% are severely dependent on nicotine use.<sup>7</sup> Similar study was conducted in Ethiopia which demonstrated that a remarkable proportion of medical students are suffering from depression (51.30%), and anxiety (30.10%) and are involved in smoking (21.20%).<sup>8</sup> On the national level the study was conducted among medical students of Karachi and medical universities of Punjab. The prevalence of nicotine practices was found to be much higher among males (22%) than females (4%).<sup>9, 10</sup>

However, half (55%) of current smokers were willing to quit smoking in the future due to health reasons.<sup>12</sup>

The main focus of this study is to determine the prevalence of nicotine practices and their association with specific anxiety disorders in medical students of Rawalpindi Medical University. By exploring this association, the research seeks to contribute valuable insights to the psychiatric department to effectively address this issue and develop coping strategies for affected individuals. These coping strategies may include psychological interventions, such as cognitive-behavioral therapy, to help individuals manage stress and anxiety related to the issue.

## Materials and Methods

This research adopts a descriptive cross-sectional, non-experimental design with a descriptive co-relational analysis method. The study employs a non-probability convenient sampling technique. Its primary objective is to investigate the potential correlation between anxiety disorders and nicotine practices among students at Rawalpindi Medical University. The study was conducted between February 2023 and August 2023. Convenient non-probability sampling was employed to select participants. All MBBS students enrolled in the academic year 2023 were eligible for inclusion, while exclusion criteria comprised students suffering from depression, dysphoria, congenital anxiety disorders, or those who opted not to participate. An anonymous, self-administered questionnaire was used, organized into categories related to demographics, the prevalence of general anxiety levels, anxiety disorders and the prevalence of the nicotine practices. Survey forms were distributed during short group discussion

(SGD) classes and long group interactive sessions (LGIS) to ensure comprehensive representation. Data was meticulously entered into Excel for analysis. The Kessler Psychological Distress Scale (K10) was used to assess general anxiety levels. This is a 10-item questionnaire intended to yield a measure of distress based on questions about anxiety and depressive symptoms that a person has experienced in the most recent 4-week period. A chi-square test was used to assess the prevalence of anxiety levels. The Hamilton Anxiety Rating Scale was employed to evaluate the prevalence of anxiety disorders. It is a psychological questionnaire that consists of 14 items, and each item is scored on a scale of 0 to 4. For quantitative variables. An independent two-tailed T-test was used to analyze the data on

anxiety disorders.

Results

This research study examined the correlation between anxiety disorders and nicotine practices among students at Rawalpindi Medical University. A total of 232 students participated in the survey, with 84 being female and 105 males. Quantitative analysis using the Chi-Square test revealed a highly significant relationship between gender and nicotine practices ( $P < 0.001$ ). 43 (29.1%) male students were involved in nicotine practices, while no female students reported such involvement. However, the association between the age of the students and nicotine practices was not found. (Table I)

**Table-I** Frequency of nicotine practices among participants.

Variable	Total	Non-nicotine users	Nicotine users	X2	p-value	df
Gender						
Male	148 (63.8%)	105 (70.9%)	43 (29.1%)	29.958	<0.001	1
Female	84 (36.3%)	84 (100%)	0 (0.0%)			
Age						
18-19	54 (23.3%)	50 (92.6%)	4 (7.4%)	7.367	0.61	3
20-21	85 (36.6%)	69 (81.2%)	16 (18.8%)			
22-23	62 (26.7%)	48 (77.4%)	14 (22.6%)			
>24	31(13.4%)	22 (71.0%)	9 (21.0%)			

The students involved in nicotine practices had higher anxiety levels than non-nicotine users. 65.5% of nicotine users had moderate anxiety and 9.3% had severe anxiety. On the other

hand, only 28.6% and 2.1% of non-nicotine users were suffering from mild and severe anxiety respectively. (Table II).

**Table-II** Prevalence of anxiety levels among participants using the Kessler Psychological Distress scale (K10) and DAAS scoring system

Anxiety levels	Nicotine users	Non-nicotine users	p-value
Not present	1 (2.3%)	33 (17.5%)	<0.001
Mild	12 (27.9%)	98 (51.9%)	
Moderate	26 (60.5%)	54 (28.6%)	
Severe	4 (9.3%)	4 (2.1%)	

Anxiety disorders, i.e. fears, insomnia, and intellectual and depressed mood were significantly associated with nicotine practices (p-value <0.005). However, the association

between other anxious moods, tension, physical inability, and social interaction was not statistically significant. (Table III)

**Table-III** Association between anxiety disorders and nicotine practices among participants using the Hamilton Anxiety Rating scale

Anxiety disorders	NU/NNU	N	Mean	Std. Deviation	Std. Error	Sig. (2-tailed)
Anxious mood	Nicotine users	43	1.79	1.166	.178	.286
	Non-nicotine users	189	1.59	1.115	.081	
Tension	Nicotine users	43	1.93	1.100	.168	.072
	Non-nicotine users	189	1.60	1.085	.079	
Fears	Nicotine users	43	2.12	1.179	.180	<0.001
	Non-nicotine users	189	1.48	1.065	.077	



Insomnia	Nicotine users	43	2.40	1.072	.164	<b>&lt;0.001</b>
	Non-nicotine users	189	1.50	1.123	.082	
Intellectual difficulty	Nicotine users	43	2.40	1.294	.197	<b>.001</b>
	Non-nicotine users	189	1.75	1.147	.083	
Depressed mood	Nicotine users	43	2.72	1.076	.164	<b>&lt;0.001</b>
	Non-nicotine users	189	1.71	1.117	.081	
Physical Inabilities	Nicotine users	43	1.60	1.137	.173	<b>.025</b>
	Non-nicotine users	189	1.17	1.123	.082	
Social Interaction	Nicotine users	43	2.40	1.218	.186	<b>.032</b>
	Non-nicotine users	189	1.93	1.298	.094	

The most common anxiety disorders that were associated with nicotine practices were fears (16.3% very severe, 18.6% severe) insomnia

(16.3% very severe, 27.9% severe) intellectual difficulty (20.9% very severe, 25.6% severe) depressed mood (25.6% very severe, 37.2% severe). (Table IV).

**Table-IV** Frequency of the most prevalent anxiety disorders found in nicotine users

Anxiety disorders	Nicotine users (n=43)	Non-nicotine users (n=189)	p-value
Fears			
Not present	3 (7.0%)	39 (20.6%)	<b>.004%</b>
Mild	11 (25.6%)	59 (31.2%)	
Moderate	14 (32.6%)	59 (31.2%)	
Severe	8 (18.6%)	26 (13.8%)	
Very Severe	7 (16.3%)	6 (3.2%)	

## Insomnia

Not present	3 (7.0%)	41 (21.7%)	<0.001%
Mild	3 (7.0%)	55 (29.1%)	
Moderate	18 (41.9%)	61 (32.3%)	
Severe	12 (27.9%)	21 (11.1%)	
Very Severe	7 (16.3%)	11 (5.8%)	

## Intellectual difficulty

Not present	3 (7.0%)	32 (16.9%)	<0.001%
Mild	9 (20.9%)	42 (22.2%)	
Moderate	10 (23.3%)	71 (37.6%)	
Severe	11 (25.6%)	29 (15.3%)	
Very Severe	9 (20.9%)	15 (7.9%)	

## Depressed mood

Not present	2 (4.7%)	30 (15.9%)	<0.001%
Mild	3 (7.0%)	51 (27.0%)	
Moderate	11 (25.6%)	62 (32.8%)	
Severe	16 (37.2%)	35 (18.5%)	
Very Severe	11 (25.6%)	11 (5.8%)	

## Discussion

The incidence of anxiety among medical students is a serious cause of concern as it alters their mental health and affects society. Our study aimed to assess anxiety levels, the prevalence of nicotine practices, and the relationship between anxiety disorders and nicotine practices among the medical students of Rawalpindi Medical University. This study

involved 232 students from all academic years of MBBS. The study findings showed in most of the students, a mild level of anxiety was found (47.4%). Moderate levels of anxiety were present in 34.5% of total students and about 3.4% of students had severe levels of anxiety. The prevalence according to anxiety levels was close to a similar study in Saudi Arabia where for low anxiety there were 245 (79%) students, for moderate anxiety there were 37(11.9%) students, for concerning level of anxiety there

were 28(9%) of students.<sup>13</sup> A similar study in Iran showed that (61.9%) did not have anxiety, 77(23.8%) had mild to moderate anxiety, 31(9.6%) had moderate to severe, and 15(4.6%) had severe anxiety.<sup>14</sup> Results of anxiety prevalence obtained from the present study were similar to those obtained in other countries: Egypt 73%, India 66.90%, and Malaysia 76.20%.<sup>15, 16, 17</sup> In Turkey, anxiety prevalence rates of 35.8% were reported and in Nepal the overall prevalence of anxiety was 41.1%.<sup>18</sup>

The prevalence of nicotine practices was also analyzed. The total nicotine use was 18.5% which is lower than 19.1% in South Africa but higher than 10.0% in the USA.<sup>19,20</sup> This study also found significant gender differences in nicotine practices. Male students were significantly more likely to be involved in nicotine than female students. 43(29.1%) of male students and 0% of female students were currently using nicotine. The result for the prevalence of nicotine practices was closer to a similar study in Saudi Arabia where 28.9% of male medical students and 4.3% of female students were current nicotine users.<sup>21</sup>

We also found a significant association between nicotine practices and various anxiety disorders. The most common anxiety disorders that were associated with nicotine practices were fears (16.3% very severe, 18.6% severe) insomnia

(16.3% very severe, 27.9% severe)

intellectual difficulty (20.9% very severe, 25.6% severe) depressed mood (25.6% very severe, 37.2% severe). The result of this association was very close to a study in Singapore.<sup>22</sup>

This finding is consistent with other countries, highlighting the global concern of anxiety in medical education. Although the prevalence of nicotine use among the surveyed students is lower than in some countries, it's still a matter of concern, with a significant gender difference.

This study has some limitations. Firstly, the sample size used in this study. Better results can be obtained by considering a larger sample. Secondly, all participants in this study were medical students and the study was conducted only in one medical college. Hence its results cannot be generalized to all over Pakistan. We need further studies involving other schools, colleges, and universities.

## Conclusion

The study indicates a high prevalence of anxiety among medical students at Rawalpindi Medical University, with a substantial proportion experiencing mild to moderate anxiety. Male students are more likely to use nicotine than their female counterparts. The study identifies a significant association between nicotine practices and various anxiety disorders. This highlights the need for targeted interventions to address both anxiety and nicotine addiction among medical students.

## References

1. Javaid SF, Hashim IJ, Hashim MJ, Stip E, Samad MA, Ahbabi AA. Epidemiology of anxiety disorders: global burden and sociodemographic associations. *Middle East Current Psychiatry*. 2023 May 26;30(1):44.
2. Rogers AH, Wieman ST, Baker AW. Anxiety comorbidities: mood disorders, substance use disorders, and chronic medical illness. *Clinical Handbook of Anxiety Disorders: From Theory to Practice*. 2020:77-103.
3. Hahad O, Beutel M, Gilan DA, Michal M, Schulz A, Pfeiffer N, König J, Lackner K, Wild P, Daiber A, Münzel T. The association of smoking and smoking cessation with prevalent and incident symptoms of depression, anxiety, and sleep disturbance in the general population. *Journal of Affective Disorders*. 2022 Sep 15;313:100-9.
4. Al-Othman N, Ghanim M, Alqaraleh M. Comparison between smoking and nonsmoking Palestinian medical students in health-promoting behaviors and lifestyle characteristics. *Biomed Res Int*. 2021 Mar 16;2021.
5. Rizvi F, Qureshi A, Rajput AM, Afzal M. Prevalence of depression, anxiety, and stress (by DASS scoring system) among medical students in Islamabad, Pakistan. *Br J Med Med Res*. 2015;8(1):69-75.
6. Melaku L, Bulcha G, Worku D. Stress, anxiety, and depression among medical undergraduate students and their coping strategies. *Educ Res Int*. 2021 Dec 6;2021.
7. Bourbon A, Boyer L, Auquier P, Boucekine M, Barrow V, Lançon C, Fond G. Anxiolytic consumption is associated with tobacco smoking and severe nicotine dependence. Results from the national French medical students (BOURBON) study. *ProgNeuropsychopharmacolBiol Psychiatry*. 2019 Aug 30;94:109645.
8. Kebede MA, Anbessie B, Ayano G. Prevalence and predictors of depression and anxiety among medical students in Addis Ababa, Ethiopia. *Int J Ment Health Syst*. 2019;13:63.
9. Mustafa N, Bashir A, Sohail R, Kumar S, Khatri M, Varrassi G. Knowledge, attitude, and practice of cigarette smoking among medical students of Quaid-e-azam Medical college, Bahawalpur: a web-based cross-sectional study. *Cureus*. 2023 Oct 4;15(10).
10. Minhas HM, Rahman A. Prevalence, patterns, and knowledge of effects on health of smoking among medical students in Pakistan. *East Mediterr Health J*. 2009;15(5):1174-9.
11. Alolabi H, Alchallah MO, Mohsen F, Shibani M, Ismail H, Alzabibi MA, Sawaf B. Prevalence and behavior regarding cigarette and water pipe smoking among Syrian undergraduates. *Heliyon*. 2020 Nov 1;6(11).
12. Brar M, Chaudhary N, Ramakrishnan TS, Randhawa A. A study of prevalence of tobacco use and related factors among medical students as per the Global Health Professions Student Survey protocol. *Int J Res Med Sci*. 2020 Jun;8(6):2243-7.
13. Medani KET, Alothaim AMA, Almutairi AJF, Alotaibi MGF, Aljasir NJ, Almutairi AQS. Anxiety among medical and non-medical students in Al Majmaah University, Saudi Arabia. *Med Sci*. 2021;25(116):2459-2468.
14. Moeini B, Bashirian S, Soltanian AR, Ghaleiha A, Taheri M. Prevalence of depression and its associated sociodemographic factors among Iranian female adolescents in secondary schools. *BMC Psychol*. 2019;7(1):25. doi:10.1186/s40359-019-0298-8.
15. Gan GG, Yuen Ling H. Anxiety, depression and quality of life of medical students in Malaysia. *Med J Malaysia*. 2019;74(1):57-61.
16. Fawzy M, Hamed SA. Prevalence of psychological stress, depression and anxiety among medical students in Egypt. *Psychiatry Res*. 2017;255:186-194.
17. Yadav R, Gupta S, Malhotra A. A cross-sectional study on depression, anxiety and their associated factors among medical students in Jhansi, Uttar Pradesh, India. *Int J Community Med Public Health*. 2016;3:1209-1214.
18. Pokhrel NB, Khadayat R, Tulachan P. Depression, anxiety, and burnout among medical students and residents of a medical school in Nepal: a cross-sectional study. *BMC psychiatry*. 2020 Dec;20:1-8.
19. Kadhum M, Ayinde OO, Wilkes C, Chumakov E, Dahanayake D, Ashrafi A, Kaffle B, Lili R, Farrell S, Bhugra D, Molodysnki A. Wellbeing, burnout and substance use amongst medical students: A summary

- of results from nine countries. *International Journal of Social Psychiatry*. 2022 Sep;68(6):1218-22.
20. Cornelius ME. Tobacco product use among adults– United States, 2021. *MMWR. Morbidity and mortality weekly report*. 2023;72.
21. Nasser AM, Geng Y, Al-Wesabi SA. The prevalence of smoking (cigarette and waterpipe) among university students in some Arab countries: a systematic review. *Asian Pacific journal of cancer prevention: APJCP*. 2020 Mar;21(3):583.
22. Ho CS, Tan EL, Ho RC, Chiu MY. Relationship of anxiety and depression with respiratory symptoms: comparison between depressed and non-depressed smokers in Singapore. *International journal of environmental research and public health*. 2019 Jan;16(1):163.

