Assessment of Smoking Prevalence, Awareness, and Addiction Risk Factors in Medical Students of Hyderabad.

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ABSTRACT:

Objective: To assess the prevalence of smoking habits among medical students in Hyderabad, their level of knowledge regarding health hazards associated with smoking, and the determinants associated with smoking.

Methodology: A cross-sectional study was conducted among medical students of Isra University, Hyderabad, Pakistan, using a simple random sampling technique. A total of 312 participants were included in the study. Data were collected using a self-structured, pre-tested questionnaire, and internal consistency was assessed using Cronbach's alpha (α = 0.78). Statistical analysis was performed using SPSS version 26, and a p-value ≤0.05 was considered statistically significant.

Results: Out enrolled medical students, 28.2% were current smokers, 33.3% were former smokers, and 38.5% were non-smokers. The highest smoking was observed in the age group of 21-25 years. Out of the total current smokers, 45.5% were smoking between 5 and 10 cigarettes per day. According to the results of the regression analysis, non-smoker students were found to have greater knowledge compared to their counterparts (β = 6.78, p = 0.012).

Conclusion: It was observed that medical students are smoking despite being aware of the health hazards associated with smoking. Peer pressure, stress, and nicotine addiction were found to be the key factors associated with smoking. It is recommended that tobacco cessation programs and stress management techniques be introduced in medical colleges for medical students.

Keywords: Smoking, Tobacco Use Disorder, Prevalence, Risk Factors, Health Knowledge, Attitudes, Practice.

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Introduction:

Tobacco smoking remains one of the leading preventable cause of morbidity and mortality worldwide, contributing significantly to the global burden of non-communicable diseases. According to the World Health Organization, tobacco use is responsible for more than 7 million deaths annually, including a substantial number of deaths due to second-hand smoke exposure.[1,2] Tobacco smoking is known to be a significant risk factor in the development of several diseases such as lung cancer, cancers of the upper and lower airways, cardiovascular conditions such as ischemic heart disease and cerebrovascular disease, and respiratory illnesses like chronic obstructive pulmonary disease. Moreover, studies have demonstrated that smoking also plays a vital role in the development of some systemic disorders, namely immune system disorder and tuberculosis.[3,4] Notwithstanding the numerous worldwide initiatives directed at curbing the prevalence of tobacco consumption, its usage rate is still quite high with over one billion people being smokers today. People who live in poorer countries seem to suffer disproportionately from tobacco-related health conditions because of inadequate tobacco control policies.[5] One in ten adults worldwide, or 1.1 billion people over the age of 15, currently smoke, and the prevalence of smoking is still significantly greater among male than female.[6] Smoking causes millions of premature deaths annually; according to latest burden estimates, smoking will be directly responsible for about 161 million disability-adjusted life years (DALYs) and around 5.8 million deaths in 2023.[7,8] Interventions for smoking among medical students are so crucial that they have an effect on public health as a whole. Once qualified, this student will be able to instruct and counsel others about the advantages of healthy habits; it is crucial to address smoking behavior among them in their early careers.[9-11]Numerous studies have indicated significant smoking rates. For example, a research by Pazdro-Zastawny et al.[12] found that 30% of medical students in India reported currently smoking, and similar trends were seen in other nations like the US and Ireland. The fact that so many medical students smoke suggests that the standard approach to health education is ineffective and has no effect on students' smoking habits.[13-15] Students of medicine should be viewed as a very important category because their future careers will involve helping others to quit smoking and prevent this unhealthy habit. However, some data indicate that many medical students across the world smoke, which implies that much needs to be done in this area.[6,7] Prevalence rates of smoking among medical students are quite variable and can go up to 10% and even 30% depending on the prevailing factors within each community.

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Hyderabad is a major urban center in Sindh, Pakistan, with a large population of medical students enrolled in both public and private medical institutions. Despite the increasing burden of tobacco use among young adults in Pakistan, limited region-specific data are available on smoking behavior among medical students in Hyderabad. Therefore, selecting this population provides valuable insight into tobacco use patterns in a key future healthcare workforce group within a high-burden, under-researched urban setting.

Therefore, this study aims to assess the prevalence of smoking among medical students in Hyderabad, evaluate their awareness regarding the health hazards of smoking, and identify the key determinants associated with smoking behavior in this population.

Methodology:

This cross-sectional questionnaire-based survey was conducted medical students of Isra University Hyderabad. Ethical approval granted by the Institutional Research Ethics Committee of Isra University Hyderabad (IUH/ASST/DEAN (CS)/39/02/23) on February 8, 2023. The data collection process was carried out over six months, from February 9, 2023, to August 8, 2023. The sample population involved the undergraduate medical students of Isra University, Hyderabad. A simple random sampling method was used to obtain the sample from the population list provided by the university authorities. The required sample size was computed based on the standard proportion estimation formula: $n = Z^2 * p * q / e^2$, where n is the sample size obtained, Z is the value of Z at a 95% confidence level (1.96), p is the proportion of the population (0.282), q = 1 – p, and e is the margin of error (0.05).[16,17] This yielded a sample size of 312.

The inclusion criteria were Isra University, Hyderabad undergraduate medical students who were present during data collection and have given their informed consent. The exclusion criteria included students who did not give their consent, were not present when the data was collected, or had not correctly completed the questionnaires. A standardized questionnaire based on other studies that examined smoking behaviour among undergraduate medical students was used to gather the data.[7,10-12] Demographic data, questions about smoking status, knowledge of the health dangers of smoking, and psycho-social concerns like peer pressure and academic stress were all included in the questionnaire. To assess the questionnaire's viability and clarity, pilot research involving a small number of students was carried out. Cronbach's alpha (α = 0.78) was measured as part of the reliability test.

Data analysis was done using IBM SPSS Statistics Version 26 software. Descriptive statistics were represented as frequency distributions. Estimates of prevalence were calculated alongside confidence intervals. Inferential statistical analysis included Chi-square tests for examining correlations between different categorical variables and smoking status. Multiple regression analysis was used to determine predictors of knowledge score about smoking. Linearity assumptions for linear regression analysis were tested by using scatter plots. Residuals were examined by using Q-Q plots and Histograms to check for normality and absence of multicollinearity through calculating the VIF.

Results:

The sociodemographic characteristics of the study participants are shown in table 1. Out of the 312 participants, 33.3% were former smokers, 38.47% were non-smokers, and 28.20% were classified as current smokers. Smoking prevalence was most common in the 21-25 age group, with 48 participants (15.38%). In the 18-20 age group, 19 participants (6.08%) were found to have smoking habits. Participants in the over 25 age group comprised 6.73% of the sample. In terms of gender, male students were in the majority at 187 (60%), while females comprised 125 (40%) of the sample. In terms of academic years, the most common academic year with the most prominent smoking habits was the second academic year at 42.30%, followed by third -year students at 12.43%.

Table No 1: Demographic characteristics of participants.

Variable	Smoker	Non-smoker	Ex-smoker
Total	88 (28.20%)	120 (38.47%)	104 (33.33%)
Age			
18-20	19 (6.08%)	34 (10.89%)	25 (8.01%)
21-25	48 (15.38%)	54 (17.30%)	50 (16.02%)
>25	21 (6.73%)	32 (10.26%)	29 (9.29%)
Gender			
Female	37 (11.86%)	47 (15.06%)	41 (13.15%)
Male	51 (16.35%)	72 (23.07%)	64 (20.51%)
Study Level			
First Year	8 (2.57%)	8 (2.57%)	9 (2.89%)
Second Year	40 (12.83%)	39 (12.50%)	53 (16.99%)
Third Year	45 (14.43%)	45 (14.43%)	35 (11.22%)
Fourth Year	9 (2.89%)	10 (3.20%)	11 (3.52%)

The smoking behaviours and factors related to smoking among medical students are shown in table 2. Forty-five percent of the individuals in the current smoking group smoked five to ten cigarettes a day. Peer pressure was the most significant element influencing students' smoking habits when it came to smoking-related issues. Influence from friends was one type of peer influence, accounting for 43% of the sample. Nicotine addiction accounted for 40% of the factors that influence students to continue smoking. Furthermore, at 23% and 20%, respectively, social connection with peers and stress management were mentioned as factors that encourage students to continue smoking. In 17% of cases, masculinity was mentioned as a factor.

The factors that encourage and impede individuals' aspirations to quit smoking are shown in table 3. Participants were most motivated to quit smoking by health concerns (30%), willpower (19%), support from friends and family, and concern for the health of patients or children, in that order. Conversely, nicotine addiction (29%), withdrawal symptoms (25%), and the company of friends who smoke were the main obstacles to quitting, with stress and emotional issues were secondary factors.

Table 2: Smoking status of current smokers (n=88).

Variable	Frequency (%)
How many cigarettes do you smoke daily	
<5	20 (22.73)
5 to 10	40 (45.46)
11 to 20	12 (13.63)
20-40	8 (9.09)
>40	8 (9.09)
By whom you were influenced to smoke?	
For style	17 (19.31)
Friend	38 (43.18)
Family member	10 (11.36)
Media	15(17.05)
Other	8 (9.09)
Reasons for continuation of smoking?	
Stress relief	18 (20.45)
Sign of masculinity	15 (17.05)
Gathering with friends	20 (22.73)
Addicted to it	35 (39.77)

Table No 3: Factors and Challenges Associated with Quitting.

Response	Frequency (%)
Will power	60 (19.23)
Fear of Health hazards	95 (30.45)
Family insistence	45 (14.43)
Friends' insistence	40 (12.82)
Bad effect on kids	27 (8.65)
Bad effect on patients	30 (9.61)
Multiple	15 (4.81)
Challenges	
Nicotine addiction	90 (28.84)
Friends smoking circle	70 (22.43)
Stress	35 (11.21)
Emotional triggers	40 (12.82)
Withdrawal symptoms	77 (24.70)

The multivariable linear regression analysis in table 4 shows the variables linked to medical students' smoking knowledge ratings. Since non-smokers scored higher than those in the smoking category and those between the ages of 18 and 25 scored higher than those beyond 25, it is evident that smoking status and age group were the key determinants. Students in their second, third, and final years scored higher than those in their first year, indicating that year of study was also a significant predictor. However, gender was found insignificant predictor. Knowledge scores were found to be significantly impacted by smoking. Non-smokers scored higher on knowledge tests than smokers ($\beta = 6.78$, $p = 0.012$). This demonstrates that the impact of quitting smoking on knowledge was moderate. Students between the ages of 18 and 25 scored much higher than older students ($\beta = 39.33$, $p < 0.001$), indicating a strong correlation between the participants' age group and knowledge scores. In a similar vein, knowledge growth was strongly correlated with academic year. First-year students scored significantly lower than those in their second, third, and fourth years (β values between 30.56 and 32.67; all $p < 0.001$).

Table No 4: Multivariable Linear Regression Analysis Identifying Predictors of Knowledge Scores Regarding Smoking Among Medical Students.

Variable	β Coefficient	Standard Error	t-value	p value
Constant	41.78	3.22	12.99	<0.001
Smoking Status				
Non-smoker vs Smoker	6.78	2.38	2.85	0.012
Age Group				
18-25 years vs >25 years	39.33	4.12	9.56	<0.001
Gender				
Female vs Male	−2.78	2.38	−1.17	0.260
Year of Study				
Second year vs First year	30.56	2.38	12.86	<0.001
Third year vs First year	32.33	2.60	12.42	<0.001
Final year vs First year	32.67	2.60	12.55	<0.001

Discussion:

On the basis of the results of the current study, habit of tobacco smoking is prevalent among medical student of Hyderabad City. More interestingly given the context of current study; despite the students' high level of health awareness, there is no discernible link between health awareness and the effectiveness of smoking prevention initiatives. Although debatable the results showed that academic stress is the primary cause of smoking among medical students that can be discussed. 56.2% of students attribute their decision to start smoking to academic stress; a finding in agreement with study of Rahman et al.[18] Stress can cause anxiety and depression, which have a significant impact on smoking behavior and in this respect findings of current study outcomes are consistent with findings of a published study by Ranaei et al.[19] The absence of institutional initiatives to mitigate academic stress and support students in managing this challenge can be regarded as

the second key determinant. This outcome aligns with the findings of Alpers et al.[20] and Thompson et al.[21], who argue that individuals struggle more to quit smoking when cessation programs are unavailable. Although the students' relationship status has little bearing on their decision to quit smoking, the psychological aspect may nevertheless be quite important. When comparing these results with previous studies, Khan et al.[23] reported a much lower smoking rate among students (14%), identifying peer pressure and participation in social events as the main drivers. In contrast, the present study highlights academic stress as the primary factor behind smoking behavior. Mustafa et al.[24] reported a smoking prevalence of 20%, noting that students showed strong awareness of its health risks. Similarly, the present study found comparable levels of health awareness; however, stress and peer pressure remain significant barriers to quitting. Ahmed LA et al. [25] emphasize that smoking prevalence can be reduced when cessation programs are combined with mental health services. These findings support the conclusions of the present study, indicating that peer influence and stress remain key determinants of smoking, though regional variations exist among medical students across different countries.

Limitations:

Current study is a cross-sectional survey and therefore unable to established the cause-and-effect relationship. Secondly for current study we solely relied on students' self -reported opinions, which may introduce social desirability bias. Also for current study, sample was limited to a single group from one specific region.

Conclusion:

The results of current study showed a relatively high prevalence of smoking among medical students in Hyderabad. Stress and peer pressure emerge as the primary determinants of smoking behavior. Nevertheless, institutional efforts to prevent smoking and support cessation remain insufficient.

References:

1. Biswas B, Varshney S, Jahnavi G, Narasimha VL, Nath S, et al. Prevalence of tobacco use, legal awareness and control attitudes among healthcare students, professionals and staff: a multicentric study in India. J Public Health (Oxf). 2025 Aug 29;47(3):e274-e287. doi: 10.1093/pubmed/fdaf041. PMID: 40269449.
2. Parthasarathi A, Shankar M, Madhivanan P, Lokesh KS, Undela K, Krishna MT et al. Determinants of Tobacco Use and Nicotine Dependence Among HealthcareStudents and Their Undergraduate Peers. Curr Respir Med Rev. 2021;17(3):139-50. doi: 10.2174/1573398X17666210713163954
3. Tunio ZH, Jhatiyal RA, Channa S, Khan OP, Makhdoom A, Khaskheli JH. Prevalence and determinants of smoking among healthcare professionals in Hyderabad. Pak J Med Health Sci. 2023;17(5):236. doi:10.53350/pjmhs22175236
4. Sukhabogi JR, Chandrashekar BR, Kumar GS, Harita N. Assessment of knowledge, attitude, and practices and motivation to quit tobacco habits in relation to age and educational status among male tobacco users visiting a Government Dental College Hospital, India. Ind Psychiatry J. 2019 Jul-Dec;28(2):203-210. doi: 10.4103/ipj.ipj_54_18. Epub 2020 Aug 14. PMID: 33223712; PMCID: PMC7659989.
5. Fakili, F., Taylan, M., Dogru, S., & Al-Haithamy, S. Prevalence of smoking among medical students and associated factors in Turkey. Journal of Substance Use.2024; 29(3), 382-388. doi:10.1080/14659891.2023.2167746
6. Elfaki, B. A. Prevalence and factors influencing smoking among medical students. Int J Health Sci.2023; 7 (S1), 525-535. doi:10.53730/ijhs.v7nS1.14234
7. Ilić M, Grujičić M, Novaković B, Vrkatić A, Lozanov-Crvenković Z. Cigarette Smoking among Medical Students from the Western Balkan. Int J Environ Res Public Health. 2022 Mar 5;19(5):3055. doi: 10.3390/ijerph19053055. PMID: 35270751; PMCID: PMC8910248.
8. Jarelnape AA, Ahmed W, Omer S, Fadlala A, Ali Z, et al. Prevalence of smoking cigarettes and beliefs regarding smoking habits among medical students: a cross-sectional study in Sudan. Front Public Health. 2023 Jun 20;11:1193475. doi: 10.3389/fpubh.2023.1193475. PMID: 37427282; PMCID: PMC10325783.
9. Todorović I, Cheng F, Stojisavljević S, Marinković S, Kremenović S, et al. Prevalence of Cigarette Smoking and Influence of Associated Factors among Students of the University of Banja Luka: A Cross-Sectional Study. Medicina (Kaunas). 2022 Mar 31;58(4):502. doi: 10.3390/medicina58040502. PMID: 35454341; PMCID: PMC9025883.
10. Pazdro-Zastawny K, Dorobisz K, Bobak-Sarnowska E, Zatoński T. Prevalence and Associated Factors of Cigarette Smoking Among Medical Students in Wroclaw, Poland. Risk Manag Healthc Policy. 2022 Mar 18;15:509-519. doi: 10.2147/RMHP.S337529. PMID: 35330863; PMCID: PMC8939861.
11. Munarini E, Stival C, Boffi R, Lugoboni F, Veronese C, et al. Factors associated with a change in smoking habit during the first COVID-19 lockdown: an Italian cross-sectional study among ever-smokers. BMC Public Health. 2022 May 25;22(1):1046. doi: 10.1186/s12889-022-13404-5. PMID: 35614423; PMCID: PMC9132352.
12. Kamble BD, Acharya BP, Jethani S, Chellaiyan VG, Singh SK, et al. Tobacco smoking habits and nicotine dependence among the college students of University of Delhi, India. J Family Med Prim Care. 2022 Jun;11 (6):2965-2970. doi: 10.4103/jfmpc.jfmpc_2172_21. Epub 2022 Jun 30. PMID: 36119160; PMCID: PMC9480809.
13. Birdsey J, Cornelius M, Jamal A, Park-Lee E, Cooper MR, et al.Tobacco Product Use Among U.S. Middle and High School Students - National Youth Tobacco Survey, 2023. MMWR Morb Mortal Wkly Rep. 2023 Nov 3;72(44):1173-1182. doi: 10.15585/mmwr.mm7244a1. PMID: 37917558; PMCID: PMC10629751.
14. Dai X, Gil GF, Reitsma MB, Ahmad NS, Anderson JA, et al. Health effects associated with smoking: a Burden of Proof study. Nat Med. 2022 Oct;28(10):2045-2055. doi: 10.1038/s41591-022-01978-x. Epub 2022 Oct 10. PMID: 36216941; PMCID: PMC9556318.
15. Santano-Mogena E, Franco-Antonio C, Chimento-Díaz S, Rico-Martín S, Cordovilla-Guardia S. Factors associated with smoking susceptibility among high school students in western Spain. Sci Rep. 2021 Jan 21;11 (1):1988. doi: 10.1038/s41598-021-81723-5. PMID: 33479420; PMCID: PMC7820497.

16. Alwhaibi A, Wajid S, Alenezi A, Salami Y, Alhaydan I, et al. Prevalence of Smoking and Beliefs and Attitude Toward Smoking Habit and Smoking Cessation Methods Among Pharmacy Students: A Cross-Sectional Study in Saudi Arabia. Front Public Health. 2022 Apr 1;10:816101. doi: 10.3389/fpubh.2022.816101. PMID: 35433590; PMCID: PMC9010672.
17. Campo L, Lumia S, Fustinoni S. Assessing Smoking Habits, Attitudes, Knowledge, and Needs among University Students at the University of Milan, Italy. Int J Environ Res Public Health. 2022 Sep 30;19(19):12527. doi: 10.3390/ijerph191912527. PMID: 36231827; PMCID: PMC9566438.
18. Rahman AU, Mambali M, Keshavarzi F, Baig MAI, Hariadha E, et al. Evaluation of Smoking Prevalence, Secondhand Smoke Exposure, Attitudes of Tobacco Control, and Smoking Cessation Knowledge among Pharmacy and Medical Students in a Private University, Malaysia. J Pharm Bioallied Sci. 2022 Jan-Mar;14 (1):38-45. doi: 10.4103/jpbs.jpbs_334_21. Epub 2022 May 19. PMID: 35784108; PMCID: PMC9245913.
19. Ranaei vahid, Abasi Hamid, Peyambari Mostafa, Alizadeh Leyla, Pilevar Zahra. Factors Affecting Cigarette Smoking in Adolescents: A Systematic Review. TOBACCO AND HEALTH.2022; 1(3), 138-145. SID. doi:10.18502/th.v1i3.10452
20. Alpers SE, Druckrey-Fiskaaen KT, Madebo T, Vold JH, Pallesen S, et al. The association of psychological distress and economic and health worries with tobacco smoking behavior during the COVID-19 pandemic: a two-year longitudinal cohort study. BMC Public Health. 2024 Feb 5;24(1):375. doi: 10.1186/s12889-024-17943-x. PMID: 38317145; PMCID: PMC10840189.
21. Thompson T, Evbuoma-Fike EI, Garg R, McQueen A, Caburnay C, et al. Examining Psychosocial Correlates of a Home Smoking Ban Among Low-income Smokers: Analysis of Social Support, Unmet Social Needs, Perceived Stress, and Depressive Symptoms. J Community Health. 2022 Dec;47(6):959-965. doi: 10.1007/s10900-022-01094-4. Epub 2022 Aug 6. PMID: 35932354; PMCID: PMC9669155.
22. Philip KE, Bu F, Polkey MI, Brown J, Steptoe A, et al. Relationship of smoking with current and future social isolation and loneliness: 12-year follow-up of older adults in England. Lancet Reg Health Eur. 2022 Jan 2;14:100302. doi: 10.1016/j.lanepe.2021.100302. PMID: 35036984; PMCID: PMC8743222.
23. Khan FM, Husain SJ, Laeeq A, Awais A, Hussain SF, Khan JA. Smoking prevalence, knowledge and attitudes among medical students in Karachi, Pakistan. East Mediterr Health J. 2005 Sep-Nov;11(5-6):952-8. PMID: 16761665. Available from https://applications.emro.who.int/emhj/1105_6/11_5-6_2005_952_958.pdf.
24. Mustafa N, Bashir A, Sohail R, Kumar S, Khatri M, et al. 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):e46459. doi: 10.7759/cureus.46459. PMID: 37927705; PMCID: PMC10623503.
25. Ahmed LA, Verlinden M, Alobeidli MA, Alahbabi RH, AlKatheeri R, et al. Patterns of Tobacco Smoking and Nicotine Vaping among University Students in the United Arab Emirates: A Cross-Sectional Study. Int J Environ Res Public Health. 2021 Jul 19;18(14):7652. doi: 10.3390/ijerph18147652. PMID: 34300103; PMCID: PMC8306162

Authors' contribution	
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Faraz Ahmed	Data collection, Data analysis
Akram Munir	Results, Data analysis, Discussion