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A Cross-Sectional Study on Tobacco Use, Knowledge, Attitudes, Practices, and Associated Factors among Students at a Higher Education Institution in Navi Mumbai

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Abstract

Tobacco use is a major preventable cause of illness and death, and the university years are a critical period for smoking initiation. This study assessed smoking prevalence, knowledge and attitudes towards smoking among students of a multidisciplinary university and examined differences by gender. A cross-sectional study was conducted from May to August 2023 among students aged 18 years or older at Navi Mumbai based university, selected by simple random sampling. Data were collected using a self-administered questionnaire validated through a pilot study and were analysed using the chi-square or Fisher's exact test. Of 155 participants, 96 (61.9%) were male and 59 (38.1%) were female; 85 (54.8%) were smokers. Smoking prevalence was 85.4% (82/96) in males and 5.1% (3/59) in females ($p<0.001$). Smokers more often agreed that smoking makes young people look cool or fit in (62.4% vs 4.3%) and that smoking has a problem-solving effect (89.4% vs 21.4%). Female respondents more often strongly agreed that all tobacco products are dangerous (83.1% vs 61.5%), while male respondents were more aware of smoking-related diseases (96.9% vs 72.9%). Smoking prevalence in this university sample was high and differed strongly by gender, and smokers held more favourable beliefs about smoking. Gender-sensitive education, smoke-free campus policies and cessation support are warranted.

Keywords: Smoking, Tobacco Use, University Students, Knowledge, Attitudes, India

1. Introduction

Tobacco use remains a leading preventable cause of illness and premature death worldwide. The World Health Organization (WHO) estimates that tobacco kills more than 7 million people each year and that around 80% of the world's 1.3 billion tobacco users live in low- and middle-income countries, where the burden of tobacco-related illness and death is heaviest [1].

India faces a dual burden of smoked and smokeless tobacco use. In the second Global Adult Tobacco Survey (GATS-2, 2016-17), 28.6% of adults aged 15 years and above currently used tobacco (42.4% of men and 14.2% of women); 10.7% smoked tobacco (19.0% of men and 2.0% of women) and 21.4% used smokeless tobacco [2]. In Maharashtra, the National Family Health Survey-5 (NFHS-5, 2019-20) reported tobacco use in 33.8% of men and 10.9% of women [3].

Young adulthood is the period in which many students begin or consolidate tobacco use. A qualitative study among university students in Kolkata found that social and behavioural factors, peer dynamics and limited awareness of harm strongly influenced the start of tobacco use [4]. Surveys among university students in other settings show wide variation. A survey at a Delhi/National Capital Region (NCR)

university reported tobacco product use in about 80% of 200 students with no major gender difference, and 59.5% of respondents wished to quit [5]. In a survey of university students in Pakistan, about 20% were smokers [6]. A study among 304 male students in Libya reported a smoking prevalence of 28.3%, associated with age, family income and smoking by family members [7], and a study among medical students in Egypt examined knowledge, attitudes and practices regarding smoking and substance use [8]. Because definitions of smoking and study methods differ, these figures are not directly comparable.

Information on smoking behaviour together with knowledge and attitudes among students in Navi Mumbai is needed to plan campus-based prevention and cessation support. This study therefore aimed to estimate the prevalence of smoking, to assess knowledge and attitudes towards smoking, and to examine the association of gender with smoking behaviour, knowledge and attitudes among students of a multidisciplinary university in Navi Mumbai.

2. Methods

2.1 Study Design, Setting and Participants

A cross-sectional study was conducted over four months (May to August 2023) at a multidisciplinary higher education institution in Navi Mumbai, Maharashtra, India. Students aged 18 years or older from different schools of the university were eligible. Participants were selected by simple random sampling and were approached at their respective schools. Only students who gave written informed consent were enrolled.

2.2 Sample Size

The minimum sample size was calculated using the single-proportion formula given in Equation 1, where n is the sample size, Z is the standard normal value for the confidence level, P is the expected prevalence and e is the absolute margin of error.

$$n = Z^2 \times P \times (1 - P) \div e^2 \quad (1)$$

With an expected smoking prevalence of 27.2% [9], a 95% confidence level (Z = 1.96) and a margin of error of about 7%, the required sample was 155 students. The sample was allocated proportionately across five schools: medicine (31 of 600 students), Ayurveda (26 of 500), pharmacy (26 of 500), dentistry (21 of 400) and engineering (51 of 1,000).

2.3 Study Instrument and Data Collection

Data were collected using a self-administered questionnaire covering demographic characteristics, socioeconomic information, smoking behaviour, and knowledge of and attitudes towards smoking. The questionnaire was validated through a pilot study before data collection. A total of 155 students were approached, and all 155 agreed to participate and completed the questionnaire (response rate 100%). Participants were informed about the objectives of the study before completing the questionnaire. A current smoker was defined, in line with the definition used in the Global Adult Tobacco Survey [2], as a participant who smoked tobacco products regularly (daily) or occasionally (less than daily) at the time of the survey; all other participants were classified as non-smokers.

2.4 Statistical Analysis

Data were entered and analysed using IBM SPSS Statistics version 22. Categorical variables were summarised as frequencies and percentages and continuous variables as mean and standard deviation. Associations between categorical variables were assessed using the chi-square test, or Fisher's exact test where expected cell counts were below 5. Smoking prevalence and knowledge responses were compared

between males and females, and attitude responses were compared between all smokers and all non-smokers. A p-value below 0.05 was considered statistically significant.

2.5 Ethical Considerations

The study proposal was approved by the D.Y. Patil University School of Public Health - School Scientific Committee (SOPU-SSC) on 26 January 2023 (Reference No. DYPU-SOPU-SSC-23-010). Written informed consent was obtained from all participants, and confidentiality of the information was maintained.

3. Results

3.1 Smoking Prevalence

A total of 155 students participated, of whom 96 (61.9%) were male and 59 (38.1%) were female. Overall, 85 students (54.8%) were smokers (Table 1). Smoking prevalence was 85.4% (82/96) among males and 5.1% (3/59) among females, a statistically significant difference (χ^2 = 95.2, degrees of freedom = 1, $p<0.001$). Males accounted for 82 of the 85 smokers (96.5%).

Table 1: Smoking Status by Gender

Smoker	**Male (n=96), n (%)**	**Female (n=59), n (%)**	**Total (n=155), n (%)**
Yes	82 (85.4)	3 (5.1)	85 (54.8)
No	14 (14.6)	56 (94.9)	70 (45.2)
Total	**96 (100)**	**59 (100)**	**155 (100)**

Percentages are within gender (column percentages).

3.2 Socio-demographic Characteristics

Participants were aged 18 to 30 years. Engineering was the largest department group (61; 39.4%), followed by dentistry (38; 24.5%), pharmacy (27; 17.4%), Ayurveda (16; 10.3%) and medicine (13; 8.4%) (Table 2). Almost all participants (154; 99.4%) lived in urban areas.

Table 2: Socio-demographic Characteristics of Respondents (n=155)

Variable	**Category**	**n (%)**
Gender	Male	96 (61.9)
	Female	59 (38.1)
Department	Medicine	13 (8.4)
	Pharmacy	27 (17.4)
	Engineering	61 (39.4)
	Ayurveda	16 (10.3)
	Dentistry	38 (24.5)
Age (years)	Range	18–30
Residential area	Rural	1 (0.6)
	Urban	154 (99.4)

3.3 Attitudes towards Smoking

Smokers were far more likely than non-smokers to agree that smoking makes young people look cool or fit in (62.4% vs 4.3%, p<0.001), that smoking has a problem-solving effect (89.4% vs 21.4%, p<0.001), that smokers have a strong personality (52.9% vs 5.7%, p<0.001) and that female smokers are more attractive and cooler than non-smokers (28.2% vs 5.7%, p<0.001) (Table 3). Belief that people who smoke have more friends did not differ significantly between smokers (34.1%) and non-smokers (25.7%) (p=0.295). Support for banning smoking inside public places was much lower among smokers (41.2%) than non-smokers (97.1%) (p<0.001); among male smokers it was 42.7%, and none of the three female smokers supported a ban. Agreement that a smoking shop should be located near an academic institute was higher among non-smokers (74.3%) than smokers (34.1%) (p<0.001). Because only three females were smokers, gender differences in attitudes among smokers could not be reliably assessed.

Table 3: Attitudes of Students towards Smoking by Smoking Status and Gender (Respondents Answering "Yes")

Statement	Smokers (n=85), n/N (%)		Non-smokers (n=70), n/N (%)		p value*
	Male	Female	Male	Female	
Smoking cigarettes makes young people look cool or fit in	52/82 (63.4)	1/3 (33.3)	0/14 (0.0)	3/56 (5.4)	<0.001
People who smoke cigarettes have more friends	28/82 (34.1)	1/3 (33.3)	1/14 (7.1)	17/56 (30.4)	0.295
In favour of banning smoking inside public places	35/82 (42.7)	0/3 (0.0)	14/14 (100.0)	54/56 (96.4)	<0.001
Smoking has a problem-solving effect	74/82 (90.2)	2/3 (66.7)	0/14 (0.0)	15/56 (26.8)	<0.001
A smoking shop should be near an academic institute	28/82 (34.1)	1/3 (33.3)	12/14 (85.7)	40/56 (71.4)	<0.001
Smokers have a strong personality	43/82 (52.4)	2/3 (66.7)	1/14 (7.1)	3/56 (5.4)	<0.001
Female smokers are more attractive and cooler than non-smokers	24/82 (29.3)	0/3 (0.0)	1/14 (7.1)	3/56 (5.4)	<0.001

*Fisher's exact test comparing all smokers with all non-smokers. Only three females were smokers, so gender comparisons among smokers are not reliable.

3.4 Knowledge and Awareness

Female respondents were more likely to strongly agree that all tobacco products are dangerous (83.1% vs 61.5%, p=0.007), and all female respondents agreed that youth need to be educated about the harm of smoking compared with 71.9% of males (p<0.001) (Table 4). Awareness that second-hand smoke harms non-smokers was almost universal (99.4%), with no gender difference. Male respondents showed higher awareness of the yearly death toll from smoking (61.5% vs 33.9%, p=0.001) and of diseases caused by smoking (96.9% vs 72.9%, p<0.001), and were more aware of smoking restrictions in public places and

transport (93.8% vs 69.5%, p<0.001). Males were also more likely to believe that smoking increases the ability to fit in a group (60.4% vs 16.9%, p<0.001).

Table 4: Knowledge and Awareness towards Smoking among Students by Gender

Statement / Response	Male (n=96), n (%)	Female (n=59), n (%)	Total (n=155), n (%)	p value*
All tobacco products are dangerous: strongly agree	59 (61.5)	49 (83.1)	108 (69.7)	0.007
Agree	35 (36.5)	10 (16.9)	45 (29.0)	
Disagree	2 (2.1)	0 (0.0)	2 (1.3)	
Strongly disagree	0 (0.0)	0 (0.0)	0 (0.0)	
Breathing other people's smoke affects non-smokers' health: Yes	95 (99.0)	59 (100)	154 (99.4)	1.000
No	1 (1.0)	0 (0.0)	1 (0.6)	
Aware of the yearly death rate due to smoking: Yes	59 (61.5)	20 (33.9)	79 (51.0)	0.001
No	37 (38.5)	39 (66.1)	76 (49.0)	
Knowledge of diseases caused by smoking: Yes	93 (96.9)	43 (72.9)	136 (87.7)	<0.001
No	3 (3.1)	16 (27.1)	19 (12.3)	
Smoking increases the ability to fit in a group: Yes	58 (60.4)	10 (16.9)	68 (43.9)	<0.001
No	38 (39.6)	49 (83.1)	87 (56.1)	
Youth need to be educated about the harm of smoking: Yes	69 (71.9)	59 (100)	128 (82.6)	<0.001
No	27 (28.1)	0 (0.0)	27 (17.4)	
Aware of smoking restrictions in public places and transport: Yes	90 (93.8)	41 (69.5)	131 (84.5)	<0.001
No	6 (6.3)	18 (30.5)	24 (15.5)	

*Fisher's exact test, male versus female. For the first statement, the p value compares "strongly agree" with all other responses (agree or strongly agree versus disagree: p=0.525).

4. Discussion

In this cross-sectional study of 155 university students in Navi Mumbai, more than half were smokers, and smoking was overwhelmingly concentrated among males (85.4% vs 5.1% in females). The male-female gap is in the same direction as national estimates, in which 19.0% of men and 2.0% of women smoked [2], but the prevalence observed in this study is far higher than the national adult figures and than the 27.2% expected when the sample size was planned. Differences in the definition of a smoker, selection

of participants and reporting may contribute, and the estimate should be read as applying to this sample rather than to all students. Studies in other settings reported lower prevalence in Pakistan (about 20%) [6] and Libya (28.3%) [7], whereas a Delhi/NCR survey found tobacco use in about 80% of students with no major gender difference [5], illustrating how widely results vary with setting and definitions.

Smokers held markedly more favourable beliefs about smoking than non-smokers. They were much more likely to link smoking with looking cool, solving problems and having a strong personality, which is consistent with the role of peer dynamics and social perceptions described among young adults in urban India [4, 5]. In contrast, almost all non-smokers supported a ban on smoking in public places, compared with fewer than half of smokers, suggesting a base of support for smoke-free campus policies. Non-smokers also agreed more often that a smoking shop should be near an academic institute; this was unexpected and may reflect differences in how the item was understood, so it should be interpreted cautiously.

Knowledge and risk perception differed by gender. Female respondents more strongly acknowledged the danger of all tobacco products, whereas male respondents were more aware of the diseases and deaths caused by smoking and of smoking restrictions. Awareness that second-hand smoke is harmful was almost universal. Because most male respondents were smokers, their higher awareness suggests that knowledge alone is unlikely to prevent smoking, and that interventions should also address social norms and provide cessation support. A significant share of males (60.4%) believed that smoking helps one fit into a group, a belief that peer-led and norm-focused campus programmes could target.

4.1 Limitations

Smoking behaviour and attitudes were self-reported and may be affected by recall and social-desirability bias. The study was conducted at a single institution, and the sample was predominantly urban (99.4%) and male (61.9%), which limits generalisability. Only three females were smokers, so comparisons within the smoker group by gender were not possible. Several statistical comparisons were made without adjustment for multiple testing, and the cross-sectional design does not allow causal inference.

5. Conclusion

Smoking was common among the students studied and was concentrated almost entirely among males. Favourable beliefs about smoking were far more common among smokers, whereas non-smokers strongly supported smoke-free public places. Risk perception differed by gender, with females more strongly recognising the danger of tobacco and males showing greater awareness of smoking-related diseases. These findings support gender-sensitive health education, clearly communicated and enforced smoke-free campus policies, and accessible cessation support for students, and they provide local baseline data for evaluating such measures. Larger, multi-institution studies with validated measures are needed to confirm these results.

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References

1. World Health Organization, “Tobacco: Fact Sheet”, World Health Organization, Geneva, 2025.

https://www.who.int/news-room/fact-sheets/detail/tobacco

2. Ministry of Health and Family Welfare, Government of India, "Global Adult Tobacco Survey GATS 2 India 2016-17: Fact Sheet", Ministry of Health and Family Welfare, New Delhi, 2017. https://nhm.uk.gov.in/files/GATS_India_2016-17_FactSheet.pdf
3. B. Rai, M. Bramhankar, "Tobacco Use among Indian States: Key Findings from the Latest Demographic Health Survey 2019-2020", Tobacco Prevention & Cessation, 2021, 7, 19. https://doi.org/10.18332/tpc/132466
4. S. Ghose, A. Sardar, S. Shiva, B.E. Mullan, S.S. Datta, "Perception of Tobacco Use in Young Adults in Urban India: A Qualitative Exploration with Relevant Health Policy Analysis", ecancermedicalscience, 2019, 13, 915. https://doi.org/10.3332/ecancer.2019.915
5. A. Goyal, A.M. Varghese, Z. Siddiqui, I. Chandra, A.S. Verma, M.D. Faizan, C.R. Singh, "A Survey of Tobacco Smoking in University Students of Delhi/National Capital Region (NCR)", Journal of Evolution of Medical and Dental Sciences, 2020, 9 (38), 2815–2819. https://doi.org/10.14260/jemds/2020/613
6. M.O. Yaseen, A. Saif, T.M. Khan, A.K. Suleiman, "A Survey of Smoking Habits among University Students and Its Susceptibility among Various Diseases", Archives of Pharmacy Practice, 2020, 11 (4), 32–42. https://doi.org/10.51847/f3yfy4Io3P
7. H.H. Abou-Faddan, S.M. Ahmed, "Knowledge, Attitude and Practice Study on Smoking among Male Students in Al-Jabal Al-Gharbi University, Gharian, Libya", Journal of American Science, 2012, 8 (11), 485–491.
8. S.F. Shalaby, M.A. Soliman, "Knowledge, Attitude, and Practice of Medical Students Regarding Smoking and Substance Abuse, Cairo University, Egypt", Journal of the Egyptian Public Health Association, 2019, 94 (1), 11. https://doi.org/10.1186/s42506-019-0011-z
9. World Bank, "Prevalence of Current Tobacco Use (% of Adults)", World Development Indicators, World Bank, Washington, DC. https://data.worldbank.org/indicator/SH.PRV.SMOK