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TOBACCO USE AND ITS CORRELATES AMONG COLLEGE-GOING STUDENTS IN AN URBAN SLUM: A MIXED-METHOD STUDY

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ABSTRACT

Background: To assess the proportion and patterns of tobacco use and identify socio-environmental correlates among college-going students residing in an urban slum area.

Materials and Methods: A cross-sectional mixed-method study was conducted among 400 college-going students in an urban slum of Indore using stratified random sampling. Quantitative data were collected using a pretested questionnaire adapted from the Global Youth Tobacco Survey and analysed using SPSS. Associations were assessed using appropriate statistical tests. The qualitative component included in-depth interviews with teachers and student representatives, and thematic analysis was performed.

Results: The proportion of ever tobacco use among participants was 24.3%, while current use was 12.8%, with higher usage among males. Smokeless tobacco was the most common form. Mean age of initiation was 20.9±2.4 years. Significant associations were observed between current tobacco use and parental use (21.5% vs 8.6%; p=0.001), sibling use (18.2% vs 9.3%; p=0.009), peer influence (32.4% vs 5.9%; p<0.001), being asked to purchase tobacco for family (19.7% vs 8.1%; p=0.002), and easy accessibility near colleges (74.0% vs 45.3%; p<0.001). Only 47.0% correctly identified both cancer and cardiovascular disease as consequences. Among current users, 58.8% expressed willingness to quit. Qualitative findings revealed normalization of tobacco use within families, peer-driven initiation, misconceptions regarding smokeless tobacco, and inadequate enforcement of tobacco control regulations.

Conclusion: Tobacco use among youth in urban slum settings is shaped by complex interplay of social, behavioural, and environmental factors. There is need for targeted, multi-level interventions focusing on behavioural change, improved awareness, stricter regulation of access, and strengthening of cessation services.

Keywords: Tobacco use, Urban slum, College students, Peer influence, Mixed-method study.

INTRODUCTION

Globally, tobacco use remains a major public health challenge, especially among adolescents and young adults.[1] It accounts for roughly 8 million deaths each year, worldwide.[1,2] There are an estimated 1 billion tobacco users globally, and most adult smokers begin the habit during their youth. Recent global surveys indicate that about 10% of youth aged 13–15 years currently use some form of tobacco, with higher proportion in many low- and middle-income countries.[1] India faces a heavy burden of tobacco-related harm, leading to approximately 1.35 million deaths per year.[3] India

is the second-largest consumer of tobacco globally, with approximately 29% of the adult population using tobacco in some form.[3] Notably, smokeless tobacco products (such as gutkha, khaini, and betel quid with tobacco) are widely used in India, available at very low cost and contributing to a large share of the total tobacco consumption.[3] Madhya Pradesh has one of the highest tobacco use rates in the country, with about 34% of adults consuming tobacco.[4] According to the Global Youth Tobacco Survey (GYTS) 2019, 8.5% of school-going adolescents aged 13–15 years in India currently use tobacco in some form.[5] Boys had a slightly higher current tobacco use rate (9.6%) than girls (7.4%).[5] A large proportion of users start in childhood. Over one-third of youth smokers and about half of smokeless tobacco users in India had initiated tobacco use before 10 years of age.[5] The median age of initiation was as low as 11–12 years for cigarettes and even younger (around 9–10 years) for bidi smoking and chewing tobacco.[5] People living in slum environments often experience poverty, low literacy, and high stress levels which are linked to higher tobacco consumption rates.[6] A study in a Mumbai urban slum reported that 17.5% of adolescent boys were tobacco users, with smokeless tobacco being the most common form consumed.[7] Multiple other influences contribute to tobacco initiation among youth. Studies have identified peer pressure, curiosity, and "fun" or enjoyment as major reasons for adolescents to start using tobacco.[8] Additionally, having family members who use tobacco significantly increases the likelihood of a young person taking up the habit.[9] A lack of awareness about the health risks of tobacco is another factor associated with higher usage, particularly in socioeconomically disadvantaged groups.[10] Thus, the present study focuses on tobacco use among college-going students in an urban slum setting. This mixed-method study aims to determine the proportion of tobacco consumption among 16–20-year-old college students residing in an urban slum in Indore, and to explore the correlates of tobacco use in this population.

MATERIALS AND METHODS

The present cross-sectional mixed methods study was conducted by the Department of Community Medicine, MGM Medical College, Indore between January 2025 and June 2025, among 400 college-going students residing in an urban slum area of Indore. Ethical approval was obtained from the Institutional Ethics Committee. Assuming a 50% proportion to ensure maximum variability with a 5% of margin of error and 95% of confidence interval (CI), the sample size was calculated as follows:

$n = Z^2*p*(1-p)/d^2$

$n= (1.96)^2*0.5*(1-0.5)/ (0.05)^2 = 0.96/0.0025 = 384.$

To account for non-responses, the final target was rounded to 400 participants. A stratified random sampling strategy was applied. Colleges in the slum locality were first enumerated, and students were proportionally recruited according to year of study and gender strata. Within each stratum, participants were selected using a simple random method. Students unwilling to participate or absent on the day of survey were replaced by randomly selected peers from the same stratum.

Written informed consent was obtained from each participant prior to enrolment. The quantitative component utilized a pretested, semi-structured questionnaire adapted from the Global Youth Tobacco Survey (GYTS) instrument, modified for the college-going age group. The qualitative component involved in-depth interviews with purposively selected teachers and student representatives from participating colleges. Each interview lasted 30–45 minutes, was conducted in the college premises, audio-recorded with prior consent, and later transcribed verbatim. Students residing in the study slum, enrolled in college, and willing to provide informed consent were included in the study.

Quantitative data was entered in Microsoft Excel and analysed using SPSS v.20.0 software. Continuous data was expressed in terms of mean and standard deviation and categorical data was expressed in proportion and percentage. Associations between tobacco use and selected socio-demographic or behavioural factors were examined using the Chi-square test, with a significance level of $p < 0.05$.

RESULTS

A total of 400 college-going students residing in an urban slum area of Indore participated in the study. Mean age of the participants was 21.56±2.26 years. The largest proportion of students belonged to the 20–21 years age group (29.25%), followed by >24 years (28.0%), 18–19 years (23.0%), and 22–23 years (19.75%). Males constituted a greater proportion of the sample (58.5%) compared to females (41.5%). With respect to academic year, 31.5% were in the second year, 30.5% in the first year, 19.5% in the third year, and 18.5% in the final year of study. Most participants belonged to nuclear families (72.0%), while 28.0% were from joint or extended families [Table 1].

The overall proportion of ever tobacco use among the participants was 24.3% (n=97). Tobacco use was more common among males (29.1%) compared to females (17.5%). The proportion of current tobacco use was 12.8% (n=51), again higher among males (16.2%) than females (7.8%). Regarding patterns of tobacco consumption, smokeless tobacco was the most commonly used form (8.5%), followed by smoking (6.0%) and dual use of smoking and smokeless tobacco (1.8%). Among current tobacco users, 5.5% reported daily consumption, with a higher proportion among males (7.3%) than females

(3.0%). The mean age of initiation of tobacco use was 20.9 ± 2.4 years [Table 2].

A significant association was observed between socio-environmental factors and current tobacco use. Participants whose parents used tobacco had a significantly higher proportion of current tobacco use (21.5%) compared to those without parental tobacco use (8.6%), and this association was statistically significant (χ^2 = 11.7, p = 0.001). Similarly, sibling tobacco use was associated with increased tobacco use among participants (18.2% vs 9.3%), with a significant association (χ^2 = 6.9, p = 0.009). Peer influence emerged as the strongest correlate; students with close friends who used tobacco reported substantially higher current use (32.4%) compared to those without such exposure (5.9%), showing a highly significant association (χ^2 = 38.4, p < 0.001). In addition, students who had previously been asked to purchase tobacco for family members had higher current use (19.7% vs 8.1%), which was statistically significant (χ^2 = 9.8, p = 0.002). Accessibility also played a key role, as 74.0% of current users reported easy access to tobacco near their college compared with 45.3% of non-users, indicating a significant association (χ^2 = 14.6, p < 0.001) [Table 3].

In terms of awareness and attitudes toward tobacco use, the majority of participants (89.0%) were aware that tobacco is harmful to health. Awareness was also high among current tobacco users (92.2%). However, only 47.0% of participants correctly identified both cancer and cardiovascular disease as consequences of tobacco use, indicating partial knowledge regarding health risks. Among current tobacco users, 58.8% expressed willingness to quit tobacco, while 11.8% reported having made a serious quit attempt during the previous year, suggesting a gap between intention and cessation behaviour [Table 4].

Table 1: Socio-Demographic Characteristics of Participants (n = 400)

Sociodemographic Characteristics	Frequency (n)	Percentage (%)
Age (in years)		
18-19	92	23.00
20-21	117	29.25
22-23	79	19.75
>24	112	28.00
Mean±S.D	21.56±2.26	
Gender		
Male	234	58.5%
Female	166	41.5%
Year of study		
1st year	122	30.5%
2nd year	126	31.5%
3rd year	78	19.5%
4th year/final year	74	18.5%
Type of family		
Nuclear	288	72.0%
Joint/extended	112	28.0%

Table 2: Proportion and Patterns of Tobacco use

Tobacco use pattern	Male (n=234)	Female (n=166)	Total (n=400)
Ever use	68 (29.1%)	29 (17.5%)	97 (24.3%)
Current use	38 (16.2%)	13 (7.8%)	51 (12.8%)
Smokeless tobacco	21 (9.0%)	13 (7.8%)	34 (8.5%)
Smoking	18 (7.7%)	6 (3.6%)	24 (6.0%)
Dual use (smoking + smokeless tobacco)	6 (2.6%)	1 (0.6%)	7 (1.8%)
Daily users (among CTU)	17 (7.3%)	5 (3.0%)	22 (5.5%)
Mean age of initiation	20.9±2.4		

Table 3: Association Between Socio-Environmental Factors and Current Tobacco Use (n = 400)

Factor	Current use (%)	Non-use (%)	χ^2 value	p-value
Parental tobacco use	21.5	8.6	11.7	0.001 **
Sibling tobacco use	18.2	9.3	6.9	0.009 **
Close friend uses tobacco	32.4	5.9	38.4	<0.001 **
Asked to buy tobacco for family	19.7	8.1	9.8	0.002 **
Easy access near college	74.0	45.3	14.6	<0.001 **

Table 4: Awareness & Attitudes Toward Tobacco Use

Awareness / Attitude Item	n (%) of All Participants	n (%) of Current Users* (n=51)
Aware that tobacco is harmful to health	356 (89.0%)	47 (92.2%)
Correctly identify both cancer & cardiovascular disease as consequences	188 (47.0%)	23 (45.1%)
Willing to quit tobacco	—	30 (58.8%)
Made a serious quit attempt in past year	—	6 (11.8%)

— = Not applicable (question not asked for non-users in this format)

Qualitative Findings: Thematic analysis of interviews with teachers and student representatives provided deeper insights into the drivers of tobacco use.

Theme 1: Family Influence and Normalization

Participants consistently reported that parental tobacco use created an environment where tobacco was perceived as acceptable. One teacher noted: "Many students openly say that they first tried tobacco because they were asked to buy it for their father or elder brother. They don't see it as something wrong, because their parents do it every day."

Theme 2: Peer Pressure and Experimentation

Students described peer influence as a critical factor in initiation. A student representative explained: "During free time, some friends challenge others to try gutkha or cigarettes. For many, it starts as fun or dares, but later it becomes a habit."

Theme 3: Easy Accessibility and Law Enforcement

Both teachers and students pointed to the abundance of tobacco stalls near colleges, despite legal restrictions. One teacher stated: "Shops just outside the college sell tobacco without hesitation. Students in uniform are also not refused. Laws are there, but not enforced."

Theme 4: Awareness and Misconceptions

While students were aware that tobacco is harmful, many underestimated the risks of smokeless tobacco. A female student reported: "We know smoking is dangerous, but gutkha or meethi supari is seen as less harmful. Some think it just helps to pass time or keep alert during classes."

DISCUSSION

The mean age of the study participants was 21.56 ± 2.26 years in the present study. Males constituted a higher proportion (58.5%) and demonstrated a greater proportion of tobacco use (29.1% ever use; 16.2% current use). Similarly, Peltzer and Pengpid,[11] in a study conducted across 24 countries, reported that male students were nearly three times more likely to be current tobacco users compared to females (22.4% vs. 6.6%). In the local context, Gupta S et al. (9) also observed a significantly higher risk of tobacco use among male law students in Indore (OR = 2.04, p = 0.004).

The proportion of current tobacco use in the present study was 12.8%, which is comparable to the 13.3% reported by Peltzer and Pengpid,[11] in their multi-country study and the 12.4% reported by Global Adult Tobacco Survey-2 for the 15–24-year age group.[12] However, this proportion is lower than that reported by Panigrahi et al. (30.6%) among slum adolescents in Bhubaneswar. On the other hand, findings of the present study are higher than the proportion reported by Jodalli and Panchmal,[12] (4.8%) in Mangalore and Sharma V et al,[13] (7.3%) in Bengaluru. These differences may be due to regional variations and differences in the study population, particularly socioeconomic factors in urban slum settings. Arora M et al,[14] reported that although self-reported tobacco use in Delhi slums was low (5.7%), biochemical validation using salivary cotinine indicated under-reporting, with 13–17% of self-reported non-users testing positive.

A key finding of the present study was that smokeless tobacco was the most commonly used form (8.5%). This is similar to findings by Jacob AM et al,[15] who reported that smokeless tobacco use remains more common in India and has declined more slowly than smoking. Similarly, Panigrahi A et al,[16] observed that a majority (73.6%) of tobacco users in Bhubaneswar slums consumed smokeless forms. The preference for smokeless tobacco in slum populations may be due to its low cost and ease of use without attracting attention. This is supported by qualitative findings from Badamali J et al,[17] where tribal youth preferred traditional smokeless products such as dukuta and khaini because they are inexpensive. In contrast, studies conducted in more affluent or specific student populations show a different pattern. For example, Gupta S et al,[9] reported a higher proportion of smoking (32%) compared to smokeless tobacco use (2.5%) among law students. Similarly, Jodalli and Panchmal,[12] found that manufactured cigarettes were the most commonly used tobacco product among daily smokers in Mangalore.

The mean age of initiation of tobacco use in present study was 20.9 ± 2.4 years, suggesting that most participants began using tobacco after entering college. This is higher than the initiation age reported in several other studies. Arora M et al,[14] reported initiation as early as 6 years, while Panigrahi A et al,[16] found the mean age of initiation to range between 10 and 13.4 years. Kamble B et al,[18] observed that most students in Delhi started using tobacco between 17 and 18 years of age. The later age of initiation in present study population may be related to the transition from school to college, which is often associated with increased independence. This observation is supported by Sharma V et al,[13] who suggested that initiation may occur during this phase due to greater freedom. In addition, Badamali J et al,[17] noted that initiation during adolescence is often driven by experimentation and the desire to appear mature.

Peer influence emerged as the strongest correlate in our study ($p<0.001$), aligning with Panigrahi A et al,[16] (aOR: 6.5, p=0.000) and the qualitative insights of Al-Jindi L et al,[19] who identified being discouraged by friends as a major barrier to quitting. T. Seemadevi et al,[20] also emphasized that peer pressure and the desire for social acceptance were primary drivers for initiation and maintenance.

Parental tobacco use was found to be another significant predictor in present study (p=0.001). Similar associations have been reported by Gupta S et al. (OR=2.9, p=0.002) (9) and Patel J et al. ($p<0.001$).[21] Shah S et al,[22] suggested that changing family structures, particularly the shift

from joint to nuclear families, may contribute to increased tobacco use. In addition, Ghose S et al,[23] observed that some students initiated smoking out of curiosity, especially to understand why their father used tobacco. Easy availability of tobacco was another important factor. In present study, 74% of current users reported easy access near their college ($p<0.001$). This finding is consistent with Panigrahi A et al. (aOR: 4.1, $p=0.006$).[16] Similarly, Ghose S et al,[23] reported that tobacco products were easily available around educational institutions, with food kiosks near campuses selling them without restriction.

Regarding awareness, although 89% of participants in present study knew that tobacco is harmful, only 47% were able to identify both cancer and cardiovascular disease as its health risks. This indicates a gap in comprehensive knowledge. Similar findings have been reported in other studies. Peltzer and Pengpid,[11] observed that while awareness of the association between tobacco use and lung cancer was high (83.6%), awareness of its association with heart disease was considerably lower (46.5%). Arora M et al,[14] also reported that adolescents often lack clarity in differentiating between short-term and long-term health effects of tobacco use.

In present study, 58.8% of tobacco users expressed a willingness to quit, but only 11.8% had made a serious attempt. This gap between intention and actual quitting behaviour has been reported in other studies as well. Panigrahi A et al,[16] observed that although 65.9% of users wanted to quit, only 16.5% had attempted quitting in the past year. Studies by Kamble B et al,[18] and Jodalli and Panchmal,[12] found that pictorial health warnings on tobacco products often have limited impact on young users. Kamble B et al,[18] reported that 58% of current smokers were not influenced by such warnings. T. Seemadevi et al,[20] highlighted that while health concerns and financial burden (such as spending ₹40–50 per day) can motivate quitting, major barriers include nicotine dependence and the use of tobacco as a means of coping with stress. Furthermore, Al-Jindi L et al,[19] and Jacob AM et al,[15] emphasized the importance of culturally appropriate and family-based interventions, as existing cessation services are often underutilized due to lack of awareness and concerns about cost.

CONCLUSION

Tobacco use remains a significant concern among college students in urban slum settings, influenced by peer groups, family practices, and easy availability. Although most students are aware that tobacco is harmful, their understanding of its full health impact is incomplete, and many who express a desire to quit do not translate it into action. The findings also suggest that tobacco use is often normalized within families, reinforced by peer interactions, and facilitated by inadequate enforcement of existing regulations. These observations highlight the need for focused interventions addressing behavioural factors, regulating access to tobacco, and improving cessation support among young people.

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