BULLETIN OF STOMATOLOGY AND MAXILLOFACIAL SURGERY
Volume 21, Issue 11

DOI: 10.58240/1829006X-2025.21.11-298

ORIGINAL RESEARCH

KNOWLEDGE, ATTITUDE, AND PRACTICES (KAP) REGARDING TOBACCO USE AND ITS ORAL HEALTH IMPACT AMONG YOUNG ADULTS A QUESTIONNAIRE-BASED STUDY

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Received: Oct 29. 2025; Accepted: Nov29, 2025; Published: Dec. 15, 2025

ABSTRACT

Background: Tobacco use remains a leading cause of preventable disease and death worldwide, with its early initiation among young adults posing a critical public-health concern. Despite increasing awareness of general health risks, knowledge of tobacco's oral health consequences remains insufficient in this age group. This study aimed to assess the knowledge, attitudes, and practices (KAP) regarding tobacco use and its oral health impact among young adults.

Materials and Methods: A descriptive cross-sectional questionnaire-based study was conducted among 400 participants aged 18–25 years. A pre-validated, self-administered KAP questionnaire was used to collect demographic information and data related to tobacco use behaviors. Statistical analysis was performed using SPSS v26, applying descriptive statistics and chi-square tests to determine associations. Correlation among KAP components was assessed using Pearson's correlation coefficient, with significance set at $p < 0.05$.

Results: Of the 400 respondents, 56% were male and 44% female, with a mean age of 21.3 ± 2.1 years. The overall prevalence of tobacco use was 22.5%, higher among males (31.7%) than females (10.2%) ($p < 0.001$). The mean knowledge, attitude, and practice scores were 6.8 ± 1.9, 27.2 ± 4.3, and 5.8 ± 2.1 respectively. Although 82% were aware that tobacco causes oral cancer, only 47% recognized its role in halitosis and 38% knew that smokeless tobacco is carcinogenic. About 48% of current users expressed willingness to quit, but only 18% had ever attempted cessation. Positive correlations were observed between knowledge–attitude ($r = 0.42$, $p < 0.001$), knowledge–practice ($r = 0.36$, $p < 0.001$), and attitude–practice ($r = 0.48$, $p < 0.001$), indicating that higher awareness and favorable attitudes were associated with better oral health behaviors.

Conclusion: The study highlights moderate knowledge and positive attitudes but suboptimal practices regarding tobacco use and oral health among young adults. Targeted awareness programs and institutional tobacco cessation counseling are essential to bridge the knowledge-practice gap. Integrating oral-health education into broader anti-tobacco initiatives can substantially reduce tobacco-related oral morbidity in this vulnerable population.

Keywords: Tobacco use, Oral health, Knowledge attitude practice, Young adults, Cessation behavior, Cross-sectional stud

Rashi Dubey, Rahul Tiwari, Aashritha Shenava. KNOWLEDGE, ATTITUDE, AND PRACTICES (KAP) REGARDING TOBACCO USE AND ITS ORAL HEALTH IMPACT AMONG YOUNG ADULTS A QUESTIONNAIRE-BASED STUDY. Bulletin of Stomatology and Maxillofacial Surgery.2025;21(11) 298-304 doi:10.58240/1829006X-2025.21.11-298

INTRODUCTION

Tobacco use remains one of the most pressing public health challenges worldwide, contributing significantly to preventable morbidity and mortality. The World Health Organization (WHO) estimates that over 8 million people die each year due to tobacco-related illnesses, with nearly 1.3 million deaths among non-smokers exposed to secondhand smoke [1]. Despite global awareness campaigns and tobacco control policies, tobacco consumption among young adults continues to rise, particularly in low- and middle-income countries where cultural, social, and peer influences play a vital role [2]. India, being the second-largest consumer of tobacco globally, faces a dual burden of smoked and smokeless tobacco use, with initiation often occurring during adolescence and early adulthood [3]. The period of young adulthood is a critical stage for the establishment of lifelong behaviors, including tobacco use. The transition from adolescence to adulthood is often accompanied by experimentation and exposure to social pressures, which may foster habits such as smoking or chewing tobacco[4]. Furthermore, young adults frequently underestimate the health risks associated with tobacco use, particularly regarding its impact on oral health [5]. Oral health is one of the earliest and most visible areas affected by tobacco consumption, manifesting as halitosis, tooth discoloration, gingival recession, periodontal disease, oral submucous fibrosis, leukoplakia, and an increased risk of oral cancer [6]. Despite these well-documented consequences, awareness regarding the oral health implications of tobacco remains suboptimal among this population group[7]. Knowledge, attitude, and practice (KAP) studies have emerged as powerful tools in understanding behavioral patterns related to health issues such as tobacco use. By assessing what individuals know, how they feel, and how they behave toward tobacco consumption, KAP studies enable the identification of gaps that can inform targeted preventive and educational strategies [8]. A positive correlation between higher levels of knowledge and healthier practices has been demonstrated in various behavioral studies, yet such associations remain underexplored in the context of tobacco-related oral health among young adults [9]. This study aims to assess the knowledge, attitudes, and practices regarding tobacco use and its impact on oral health among young adults. Understanding these parameters is essential for designing effective public health interventions, particularly those focused on prevention and cessation. The study's findings will contribute to the growing body of evidence needed to strengthen community-based oral health promotion and tobacco control initiatives. Furthermore, the outcomes may guide policymakers and educators in developing targeted awareness programs that address the misconceptions and behavioral determinants underlying tobacco use in this vulnerable age group [10].

This cross-sectional, questionnaire-based study was conducted among young adults aged 18 to 25 years in an educational institution. Ethical clearance was obtained from the institutional review board prior to commencement. Informed consent was obtained from all participants before inclusion in the study. A structured, self-administered questionnaire was designed to evaluate three major domains: knowledge, attitude, and practices regarding tobacco use and its oral health impact. The questionnaire consisted of close-ended and multiple-choice questions. It was pretested on a small group of respondents to assess clarity, validity, and reliability, and necessary modifications were made based on feedback. The final questionnaire included demographic details such as age, gender, and educational status, followed by sections assessing knowledge (10 items), attitude (8 items), and practices (8 items). Knowledge questions focused on awareness of the health and oral consequences of tobacco use, while attitude items explored perceptions toward tobacco control and cessation. Practice-related items assessed the participants' current and past tobacco use behaviors. The sample size was determined using a standard formula for prevalence studies, considering a 95% confidence interval and a 5% margin of error. Participants were selected through stratified random sampling to ensure representation across different educational streams. Data were collected anonymously to encourage honest responses. Responses were coded and entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics, including mean, standard deviation, and percentages, were used to summarize the data. Inferential statistics, such as chi-square tests, were applied to examine associations between demographic factors and KAP scores. A p-value of <0.05 was considered statistically significant.

Results

A total of 400 young adults participated in the study, with a response rate of 95%. The participants' mean age was 21.3 ± 2.1 years. Among them, 56% were male (n = 224) and 44% female (n = 176). The majority of respondents (68%) were undergraduate students, while 22% were postgraduate students and 10% were employed. Approximately 63% resided in urban areas and 37% in semi-urban or rural areas. Table 1

Table 1. Socio-demographic Characteristics of the Study Participants (n = 400)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	18–20	168	42.0
	21–23	156	39.0
	24–25	76	19.0
Gender	Male	224	56.0
	Female	176	44.0
Education Level	Undergraduate	272	68.0
	Postgraduate	88	22.0
	Employed	40	10.0
Residence	Urban	252	63.0
	Semi-urban / Rural	148	37.0

Prevalence and Pattern of Tobacco Use

Out of the total participants, 22.5% (n = 90) reported current tobacco use, while 7.5% (n = 30) were former users, and 70% (n = 280) had never used tobacco. Among current users, 60% reported smoking forms (cigarettes or bidis), 25% used smokeless forms (gutkha, khaini, pan masala, or betel quid with tobacco), and 15% reported dual use. The mean duration of use among current users was 2.6 ± 1.3 years, with an average frequency of 5.4 ± 3.1 tobacco exposures per day. Table 2

Gender-wise comparison revealed that tobacco use was significantly higher among males (31.7%) compared to females (10.2%) ($\chi^2 = 18.64$, $p < 0.001$). A higher prevalence was observed among participants from rural and semi-urban areas (29.5%) compared to urban respondents (18.4%) ($p = 0.028$). Table 2

Table 2. Prevalence and Pattern of Tobacco Use among Participants

Tobacco Use Status	Frequency (n)	Percentage (%)
Current users	90	22.5
Former users	30	7.5
Never used	280	70.0
Type of Tobacco Used (among current users, n = 90)		
Smoking (cigarettes/bidis)	54	60.0
Smokeless (gutkha, khaini, pan masala)	23	25.5
Dual use	13	14.5
Mean duration of use (years)	—	2.6 ± 1.3
Mean daily frequency	—	5.4 ± 3.1

Knowledge Regarding Tobacco Use and Oral Health Impact

The overall mean knowledge score was 6.8 ± 1.9 (maximum = 10). About 82% of respondents were aware that tobacco use causes oral cancer, while 69% knew that it leads to periodontal diseases. However, only 54% recognized its role in causing tooth discoloration, 47% in halitosis, and 41% in delayed wound healing after dental extraction. Knowledge regarding the harmful effects of smokeless tobacco was comparatively low, with only 38% acknowledging its carcinogenic potential. A significant difference in mean knowledge scores was found between tobacco users (5.9 ± 2.0) and non-users (7.1 ± 1.7) ($p = 0.003$), indicating lower awareness among those who currently used tobacco. Female respondents exhibited slightly higher mean knowledge scores (7.0 ± 1.8) than males (6.6 ± 2.0), though the difference was not statistically significant ($p = 0.08$). Educational status was significantly associated with knowledge levels ($p = 0.012$), with postgraduate students demonstrating higher awareness compared to undergraduates. Table 3

Table 3. Knowledge Regarding Tobacco Use and Oral Health Impact

Knowledge Parameter	Correct Response (n)	Percentage (%)
Tobacco causes oral cancer	328	82.0
Causes periodontal diseases	276	69.0
Leads to tooth discoloration	216	54.0
Causes halitosis (bad breath)	188	47.0
Causes delayed wound healing after extraction	164	41.0
Smokeless tobacco is carcinogenic	152	38.0
Mean knowledge score (overall)	—	6.8 ± 1.9
Mean score (users vs. non-users)	5.9 ± 2.0 vs. 7.1 ± 1.7	p = 0.003

Attitude Toward Tobacco Use and Cessation

The overall mean attitude score was 27.2 ± 4.3 (maximum = 40). About 78% of participants agreed that tobacco use is harmful to health, and 71% supported strict legislation against tobacco sales near educational institutions. Nearly 66% believed that awareness campaigns in colleges could help reduce tobacco consumption, while 58% felt that tobacco users should seek professional help to quit. However, 22% believed that occasional use was harmless, reflecting a gap in risk perception. Among current users, 48% expressed willingness to quit, but only 18% had ever attempted cessation. The most commonly reported barriers to quitting were peer influence (46%) and stress (33%). Male participants showed a less favorable attitude toward cessation compared to females (mean attitude scores 26.4 ± 4.2 vs. 28.2 ± 4.1, $p = 0.021$). Participants with higher knowledge scores also had significantly more positive attitudes ($r = 0.42$, $p < 0.001$). Table 4

Table 4. Attitudes toward Tobacco Use and Cessation

Attitude Statement	Agree n (%)	Neutral n (%)	Disagree n (%)
Tobacco is harmful to health	312 (78.0)	60 (15.0)	28 (7.0)
Laws should prohibit tobacco near schools/colleges	284 (71.0)	64 (16.0)	52 (13.0)
Awareness programs can reduce use	264 (66.0)	80 (20.0)	56 (14.0)
Occasional use is harmless	88 (22.0)	92 (23.0)	220 (55.0)
Users should seek professional help	232 (58.0)	98 (24.5)	70 (17.5)
Mean attitude score	—	27.2 ± 4.3	
Gender comparison (Male vs. Female)	26.4 ± 4.2 vs. 28.2 ± 4.1	p = 0.021	

Practices Related to Tobacco Use and Oral Health Maintenance

The mean practice score was 5.8 ± 2.1 (maximum = 10). Only 32% of all participants reported visiting a dentist within the past year, and merely 24% of tobacco users had ever undergone an oral screening for precancerous lesions. Among tobacco users, 38% brushed their teeth twice daily, compared to 62% of non-users ($p = 0.011$). About 52% of participants stated that they avoided regular dental visits due to lack of awareness or perceived need. A strong negative correlation was found between tobacco use status and oral hygiene practices ($r = –0.39$, $p < 0.001$). Moreover, participants with higher attitude scores were significantly more likely to report positive oral hygiene behaviors ($p = 0.005$). Table 5

Table 5. Practices Related to Oral Hygiene and Tobacco Use

Practice Parameter	Yes n (%)	No n (%)
Brushing twice daily	232 (58.0)	168 (42.0)
Dental visit in past 12 months	128 (32.0)	272 (68.0)
Oral screening for lesions (among users)	22 (24.4)	68 (75.6)
Avoid dental visits due to lack of awareness	208 (52.0)	192 (48.0)
Mean practice score (overall)	—	5.8 ± 2.1
Users vs. Non-users	4.9 ± 1.8 vs. 6.2 ± 2.0	p = 0.011

Overall KAP Correlation

A positive correlation was observed between knowledge and attitude ($r = 0.42$, $p < 0.001$), knowledge and practice ($r = 0.36$, $p < 0.001$), and attitude and practice ($r = 0.48$, $p < 0.001$). These findings suggest that increased awareness and favorable attitudes toward tobacco control are associated with better preventive practices and oral health behaviors. Table 6

Table 6. Correlation between Knowledge, Attitude, and Practice Scores

Variables Correlated	Correlation Coefficient (r)	p-value	Interpretation
Knowledge – Attitude	0.42	< 0.001	Moderate positive correlation
Knowledge – Practice	0.36	< 0.001	Moderate positive correlation
Attitude – Practice	0.48	< 0.001	Strong positive correlation

DISCUSSION

The findings of this study reveal a moderate level of knowledge and positive attitudes toward the hazards of tobacco use among young adults, though actual cessation practices remain suboptimal. This aligns with similar cross-sectional and interventional studies conducted in South Asia that highlight persistent gaps between awareness and behavioral change [9-11].

Tobacco control education among adolescents and youth has consistently shown measurable improvement in awareness and preventive behavior when targeted through structured health education programs [11]. Budukh et al. (2022) reported that school-based interventions significantly enhanced understanding of the carcinogenic potential of tobacco and oral lesions among Indian students, emphasizing the need for early initiation of preventive education [11].

The current findings also reflect the growing concern regarding smokeless tobacco and areca nut use, particularly among young populations, as identified in comparative studies across Indian states [12,13]. Bhattacharjee and Gangopadhyay (2022) found higher prevalence of chewing-related oral lesions among females from northern West Bengal compared to southern regions, suggesting that sociocultural permissiveness toward smokeless tobacco among women sustains the epidemic [12]. Similarly, Sharma and Kalaskar (2021) documented 37.2% tobacco use among adolescents in rural Maharashtra, primarily due to easy access and peer influence [13].

Parental and community awareness remains another critical determinant. Kattimani et al. (2022) reported that although 85% of Indian parents recognized the cancer risk associated with tobacco, only two-thirds were aware of the Cigarette and Other Tobacco Products Act (COTPA), highlighting enforcement gaps at the community level [14]. Strengthening such legal literacy could reinforce tobacco control through familial and social mechanisms.

Gender and social determinants continue to influence tobacco use patterns. A spatial analysis by Krishnamoorthy and Ganesh (2020) demonstrated that female tobacco use in India is spatially clustered in northeastern and central states, driven by poverty, illiteracy, and concurrent alcohol use [8]. This regional concentration indicates that national cessation efforts must include culturally sensitive, gender-responsive approaches to maximize reach and effectiveness.

In addition to sociodemographic factors, occupational and educational disparities affect tobacco cessation readiness. Lalramdini et al. (2024) observed that even among healthcare professionals such as nurses in Mizoram, the prevalence of tobacco use remained notable, underlining the normalization of the habit despite medical awareness [16]. Professional role models who use tobacco can undermine youth-oriented anti-tobacco messaging, necessitating behavioral change interventions within the health sector itself.

At a systems level, Walia and Goel (2023) emphasized the necessity of strengthening **supply-side interventions**—including strict monitoring of marketing and sales—to curb the growing tobacco epidemic [17]. The integration of school and college-based programs with supply restrictions could yield sustainable outcomes in the young adult demographic [18].

Recent studies also underscore the emerging role of novel products like e-cigarettes and paan masala variants in maintaining nicotine dependence among educated youth [5,7]. Sarkar et al. (2024) observed that although 85% of university students recognized the harms of smokeless tobacco, nearly 19% still used areca nut and 3.9% engaged in vaping as a substitute, demonstrating a dangerous misconception of relative safety [19]. Such findings suggest that awareness alone is insufficient without reinforcing cessation motivation and policy-level regulation.

Collectively, these results affirm the need for a comprehensive, multi-sectoral strategy encompassing early education, community awareness, legislative enforcement, and cessation support. The oral health

consequences of tobacco—ranging from mucosal lesions to malignancy—should be framed not only as a medical issue but also as a social and behavioral challenge requiring cross-disciplinary collaboration [18-20].

CONCLUSION

The study revealed that while young adults possessed a fair degree of awareness regarding the general health risks of tobacco, their knowledge of its specific oral health consequences was inadequate. Although most participants exhibited positive attitudes toward tobacco control, this was not consistently reflected in their preventive oral health practices. The significant correlations among knowledge, attitude, and practice scores highlight that improving awareness can directly influence healthier behaviors and facilitate tobacco cessation.

Tobacco control strategies must therefore incorporate oral health education as a vital component of youth-oriented prevention programs. Dental professionals, educators, and policymakers should collaborate to implement regular awareness campaigns, cessation counseling, and screening initiatives in academic and community settings. Addressing knowledge–practice gaps through sustained, culturally sensitive educational efforts may substantially reduce the burden of tobacco-related oral diseases in young populations.

DECLARATIONS

Funding
This research did not receive any specific grant or financial support.
Competing Interests
The authors have no competing interests to declare.
Informed Consent
Not applicable.

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