

Preplanned Studies

Smoking Prevalence and Initiation Reasons Among College Students — China, 2025

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Summary

What is already known about this topic?

In 2021, the prevalence of current smoking and current daily smoking among Chinese college students was 7.8% and 4.7%, respectively.

What is added by this report?

The prevalence of current cigarette smoking among college students in China declined from 7.8% in 2021 to 7.3% in 2025; however, this rate remained substantially higher than that of senior high school students. Stress relief, curiosity, and socializing were the primary reasons for smoking initiation among college students.

What are the implications for public health practice?

Strengthening tobacco control measures for college students is essential, including raising the legal age for tobacco sales to restrict access and implementing targeted interventions that address stress, curiosity, and social influences driving smoking initiation.

females [current smoking: males 12.9% (95% CI: 12.0%, 13.8%), females 1.4% (95% CI: 1.3%, 1.5%); daily smoking: males 8.7% (95% CI: 8.1%, 9.4%), females 0.7% (95% CI: 0.6%, 0.8%)]. Higher Vocational Colleges had higher rates [current smoking: 10.0% (95% CI: 8.9%, 11.1%), daily smoking: 6.7% (95% CI: 6.0%, 7.4%)] than Provincial Colleges [5.0% (95% CI: 4.5%, 5.5%) and 3.2% (95% CI: 2.8%, 3.6%)] and Colleges Directly Under the Central Ministries and Commissions or Co-sponsored by Province and Ministry [3.2% (95% CI: 2.9%, 3.6%) and 1.9% (95% CI: 1.7%, 2.2%)]. Stress relief (73.1%), curiosity (11.3%), and socializing (10.8%) were the leading reasons for smoking initiation.

Conclusion: Concerted efforts are needed to reduce tobacco use among college students, including strengthening campus-level tobacco control policies, addressing smoking initiation during the transition to college, considering stronger age-related sales restrictions, and delivering tailored interventions targeting stress, peer influence, and curiosity-driven behaviors.

ABSTRACT

Introduction: College students represent a key population at risk for smoking initiation and continued use. During the transition from high school to college, increased autonomy and legal access to tobacco may elevate smoking prevalence, yet tobacco control policies specifically targeting this group remain limited.

Methods: This study analyzed smoking prevalence [with 95% confidence intervals (CIs)] and reasons for smoking initiation among college students using data from the 2025 national survey. Survey-weighted prevalence estimates were calculated using complex sampling procedures, and Rao–Scott χ^2 tests were applied to assess differences across subgroups.

Results: In 2025, the prevalence of current and daily smoking among Chinese college students was 7.3% (95% CI: 6.7%, 7.9%) and 4.8% (95% CI: 4.4%, 5.2%), respectively, with males substantially exceeding

Tobacco use remains one of the leading risk factors driving the global disease burden (1), with smoking initiation typically occurring during adolescence and early adulthood (2). To prevent tobacco use among young people, China has implemented a range of policies aimed at protecting minors, including prohibiting the sale of tobacco products to individuals under 18 years of age, restricting tobacco advertising and promotion, and establishing smoke-free environments in schools. However, tobacco control measures specifically targeting college students remain relatively limited. Once students reach the legal age of 18 and gain unrestricted access to tobacco products, they may become increasingly vulnerable to smoking initiation.

In 2021, the Tobacco Control Office of the China CDC conducted the first nationwide survey on

tobacco use among Chinese college students (3). The 2025 survey constitutes the second nationally representative assessment of tobacco use in this population. Building on these efforts, the present study aims to evaluate trends in cigarette smoking and daily smoking among Chinese college students between 2021 and 2025 and to further examine smoking patterns and reasons for initiation. The findings are intended to inform the refinement of tobacco control policies and the development of targeted interventions tailored to the needs of college students in China.

This survey employed a three-stage stratified cluster sampling method. In the first stage, all colleges in China were stratified into three categories based on institutional attributes: Colleges Directly Under the Central Ministries and Commissions or Colleges Co-sponsored by Province and Ministry (CCMC/CCPM), Provincial Colleges (PC), and Higher Vocational Colleges (HVC). In the second stage, seven colleges were selected within each provincial-level administrative division (PLAD) according to the distribution of school types. In the third stage, six classes per grade were randomly sampled from CCMC/CCPM or PC institutions and eight classes per grade from HVC institutions. Only classes with a minimum enrollment of 40 students were eligible for selection, and all students within each selected class were surveyed. Post hoc stratification was applied to adjust for the distribution of PLAD, institutional attributes, grade, and sex.

The survey questionnaire, adapted from the Global Adult Tobacco Survey (GATS), included items on basic demographic characteristics, cigarette use, and smoking initiation. Current smoking status was assessed by asking participants, "Do you currently smoke tobacco on a daily basis, less than daily, or not at all?" Current smokers (CS) were defined as those who responded "daily" or "less than daily," and current daily smokers (CDS) were defined as those who responded "daily." Reasons for smoking initiation were assessed through a single-choice item asking participants to identify their primary reason for starting smoking; response options included stress relief, social reasons, curiosity, fashion, and other reasons. Data cleaning incorporated class-level student response rates and verification pass rates, along with additional checks for logical inconsistencies, missing values, and outliers to ensure the integrity of the final analytical dataset. Prevalence rates were calculated, and chi-square tests were used to assess group differences. All statistical analyses were performed using SAS software (version

9.4, SAS Institute Inc., Cary, NC, USA).

This survey encompassed 217 colleges across 31 PLADs, with 265,930 participants completing individual questionnaires and an overall response rate of 96.0%. The CS prevalence among college students was 7.3% [95% confidence interval (CI): 6.7%, 7.9%], with rates of 3.2% (95% CI: 2.9%, 3.6%), 5.0% (95% CI: 4.5%, 5.5%), and 10.0% (95% CI: 8.9%, 11.1%) for CCMC/CCPM, PC, and HVC students, respectively. Males exhibited significantly higher CS prevalence than females across all school types [4.7% (95% CI: 4.0%, 5.4%), 9.1% (95% CI: 8.1%, 10.1%), and 17.6% (95% CI: 16.2%, 18.9%) *vs.* 1.2% (95% CI: 1.1%, 1.3%), 1.1% (95% CI: 0.9%, 1.2%), and 1.8% (95% CI: 1.5%, 2.0%), respectively; $P < 0.05$]. The overall CDS prevalence was 4.8% (95% CI: 4.4%, 5.2%), highest among HVC students [6.7% (95% CI: 6.0%, 7.4%)], followed by PC [3.2% (95% CI: 2.8%, 3.6%)] and CCMC/CCPM students [1.9% (95% CI: 1.7%, 2.2%)], with males [8.7% (95% CI: 8.1%, 9.4%)] again exceeding females [0.7% (95% CI: 0.6%, 0.8%)] ($P < 0.05$). Regionally, the western region had the highest CS prevalence [10.2% (95% CI: 9.1%, 11.3%)], compared with the eastern [6.1% (95% CI: 5.0%, 7.2%)] and middle regions [6.0% (95% CI: 5.2%, 6.7%)]. Similarly, the CDS prevalence in the western region [6.8% (95% CI: 6.0%, 7.5%)] surpassed that in the eastern [4.0% (95% CI: 3.3%, 4.7%)] and middle regions [3.9% (95% CI: 3.3%, 4.5%)] ($P < 0.05$) (Table 1). Medical students had significantly lower CS [4.0% (95% CI: 3.3%, 4.7%) *vs.* 7.7% (95% CI: 7.1%, 8.3%), $P < 0.01$] and CDS [2.5% (95% CI: 2.1%, 3.0%) *vs.* 5.1% (95% CI: 4.6%, 5.5%), $P < 0.01$] prevalence than non-medical students.

The prevalence of CS among Chinese college students increased significantly with age and showed significant sex differences (P for trend < 0.0001). The lowest CS prevalence was observed among students aged ≤ 18 years [6.1% (95% CI: 5.5%, 6.8%)], with males [11.0% (95% CI: 9.8%, 12.2%)] reporting substantially higher rates than females [1.7% (95% CI: 1.4%, 2.1%)]. In contrast, the highest prevalence was identified among those aged ≥ 24 years [14.1% (95% CI: 11.8%, 16.4%)], reaching 18.9% (95% CI: 15.9%, 21.8%) in males and 4.0% (95% CI: 2.1%, 5.8%) in females (Figure 1).

Stress relief [73.1% (95% CI: 72.2%, 74.0%)], curiosity [11.3% (95% CI: 10.6%, 11.9%)], and socializing [10.8% (95% CI: 10.2%, 11.4%)] were the leading reasons for smoking initiation among college

TABLE 1. Current cigarette smoking prevalence among college students in China, 2025.

Region	School type	Total						Males						Females					
		Current smokers			Current daily smokers			Current smokers			Current daily smokers			Current smokers			Current daily smokers		
		Unweighted	Weighted	Percentage (95% CI)	Unweighted	Weighted	Percentage (95% CI)	Unweighted	Weighted	Percentage (95% CI)	Unweighted	Weighted	Percentage (95% CI)	Unweighted	Weighted	Percentage (95% CI)	Unweighted	Weighted	Percentage (95% CI)
		n			n			n			n			n			n		
Total	Overall	21,585	7.3 (6.7, 7.9)	14,364	4.8 (4.4, 5.2)	19,287	12.9 (12.0, 13.8)	8.7 (8.1, 9.4)	13,237	8.7 (8.1, 9.4)	2,298	1.4 (1.3, 1.5)	1,127	0.7 (0.6, 0.8)					
	CCMC/CCPM	549	3.2 (2.9, 3.6)	325	1.9 (1.7, 2.2)	445	4.7 (4.0, 5.4)	3.0 (2.5, 3.6)	286	3.0 (2.5, 3.6)	104	1.2 (1.1, 1.3)	39	0.4 (0.3, 0.5)					
	PC	5,667	5.0 (4.5, 5.5)	3,679	3.2 (2.8, 3.6)	4,919	9.1 (8.1, 10.1)	6.0 (5.2, 6.7)	3,317	6.0 (5.2, 6.7)	748	1.1 (0.9, 1.2)	362	0.5 (0.4, 0.6)					
	HVC	15,369	10.0 (8.9, 11.1)	10,360	6.7 (6.0, 7.4)	13,923	17.6 (16.2, 18.9)	12.1 (11.1, 13.1)	9,634	12.1 (11.1, 13.1)	1,446	1.8 (1.5, 2.0)	726	0.9 (0.7, 1.0)					
Eastern	Overall	5,925	6.1 (5.0, 7.2)	4,041	4.0 (3.3, 4.7)	5,142	10.7 (9.0, 12.4)	7.2 (6.1, 8.3)	3,662	7.2 (6.1, 8.3)	783	1.3 (1.1, 1.6)	379	0.6 (0.5, 0.8)					
	CCMC/CCPM	321	2.9 (2.6, 3.1)	192	1.8 (1.7, 1.9)	257	4.2 (3.7, 4.7)	2.9 (2.5, 3.2)	169	2.9 (2.5, 3.2)	64	1.0 (0.9, 1.2)	23	0.4 (0.2, 0.5)					
	PC	1,641	4.2 (3.6, 4.9)	1,062	2.7 (2.3, 3.0)	1,386	7.4 (6.2, 8.6)	4.8 (4.1, 5.6)	937	4.8 (4.1, 5.6)	255	1.0 (0.6, 1.4)	125	0.5 (0.3, 0.7)					
	HVC	3,963	8.6 (6.5, 10.7)	2,787	5.8 (4.4, 7.1)	3,499	15.3 (12.8, 17.8)	10.6 (8.9, 12.2)	2,556	10.6 (8.9, 12.2)	464	1.7 (1.3, 2.1)	231	0.8 (0.5, 1.1)					
Central	Overall	4,836	6.0 (5.2, 6.7)	3,288	3.9 (3.3, 4.5)	4,309	10.8 (9.6, 12.0)	7.2 (6.3, 8.2)	3,013	7.2 (6.3, 8.2)	527	1.1 (0.9, 1.3)	275	0.6 (0.4, 0.7)					
	CCMC/CCPM	109	3.6 (1.7, 5.5)	70	2.3 (0.7, 4.0)	90	5.7 (0.6, 10.8)	4.0 (0.0, 8.3)	63	4.0 (0.0, 8.3)	19	1.1 (1.0, 1.1)	7	0.4 (0.4, 0.4)					
	PC	1,208	4.1 (3.3, 4.8)	754	2.4 (1.8, 3.1)	1,043	7.5 (6.3, 8.6)	4.6 (3.6, 5.7)	670	4.6 (3.6, 5.7)	165	0.9 (0.7, 1.0)	84	0.4 (0.3, 0.5)					
	HVC	3,519	7.9 (6.6, 9.2)	2,464	5.3 (4.4, 6.3)	3,176	14.0 (12.0, 16.0)	9.6 (8.1, 11.2)	2,280	9.6 (8.1, 11.2)	343	1.4 (1.0, 1.7)	184	0.7 (0.5, 0.9)					
Western	Overall	10,824	10.2 (9.1, 11.3)	7,035	6.8 (6.0, 7.5)	9,836	17.9 (16.4, 19.3)	12.2 (11.0, 13.3)	6,562	12.2 (11.0, 13.3)	988	1.8 (1.5, 2.1)	473	0.9 (0.7, 1.0)					
	CCMC/CCPM	119	4.2 (4.2, 4.2)	63	2.1 (2.1, 2.1)	98	5.6 (5.6, 5.6)	3.0 (3.0, 3.0)	54	3.0 (3.0, 3.0)	21	1.9 (1.9, 1.9)	9	0.6 (0.6, 0.6)					
	PC	2,818	7.0 (5.9, 8.1)	1,863	4.6 (3.8, 5.4)	2,490	12.7 (10.5, 15.0)	8.6 (7.0, 10.2)	1,710	8.6 (7.0, 10.2)	328	1.3 (0.9, 1.7)	153	0.6 (0.4, 0.9)					
	HVC	7,887	14.2 (12.3, 16.2)	5,109	9.5 (8.1, 11.0)	7,248	24.2 (22.1, 26.4)	16.6 (14.8, 18.4)	4,798	16.6 (14.8, 18.4)	639	2.4 (1.9, 2.8)	311	1.2 (0.9, 1.4)					

Abbreviation: CI=confidence interval; CCMC=colleges directly under the central ministries and commissions; CCPM=colleges co-sponsored by province and ministry; PC=provincial colleges; HVC=higher vocational colleges.

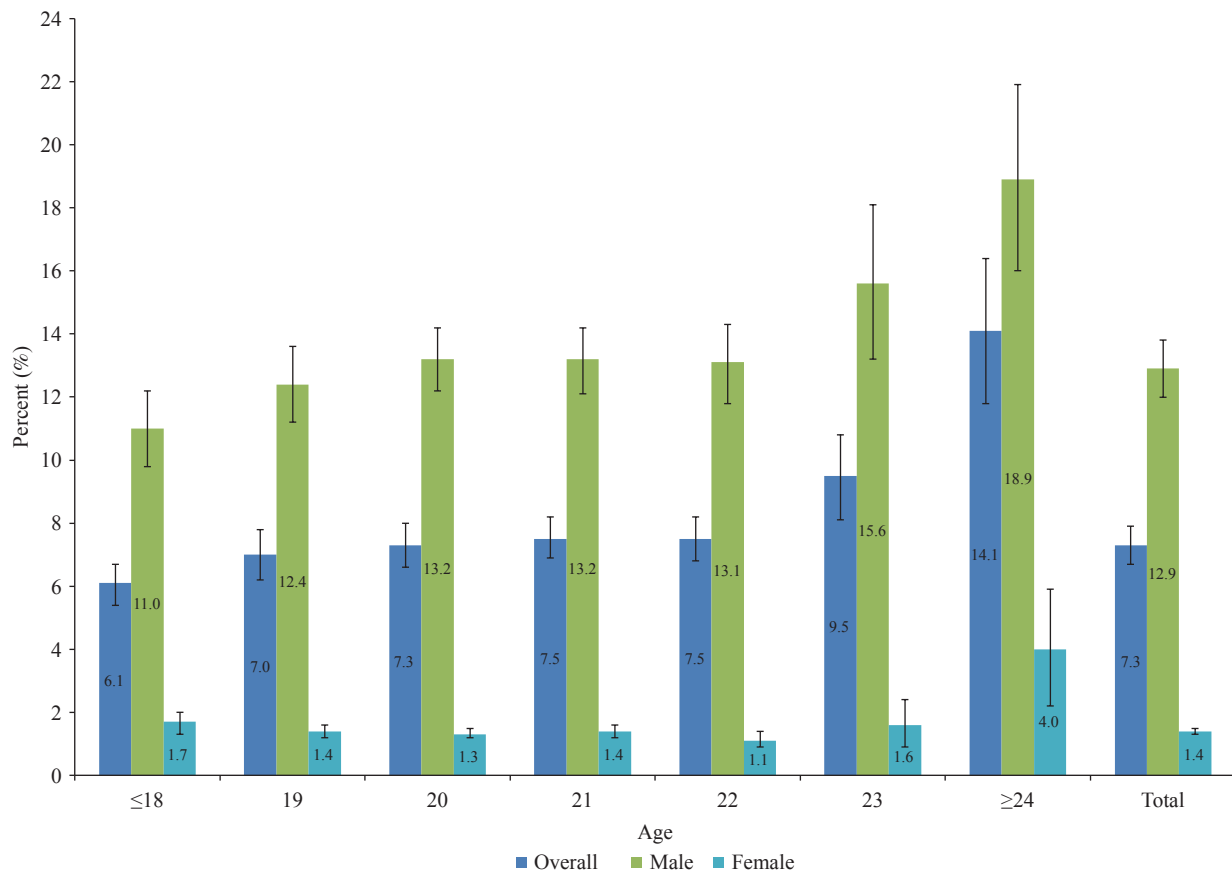


FIGURE 1. Prevalence of current cigarette smoking by age and sex among college students in China, 2025.

students. The distribution of these reasons differed by sex: females reported stress relief more frequently than males [76.8% (95% CI: 74.6%, 79.0%) vs. 72.7% (95% CI: 71.7%, 73.6%)], whereas social reasons were more common among males [11.3% (95% CI: 10.7%, 12.0%) vs. 6.2% (95% CI: 4.9%, 7.6%)]. Fashion-related motives were also more frequently cited by females than males [2.7% (95% CI: 1.6%, 3.7%) vs. 1.2% (95% CI: 0.9%, 1.4%)]. Across grade levels, stress-related initiation was most prevalent among fourth-year students [75.0% (95% CI: 72.6%, 77.3%)], social reasons peaked among third-year students [11.9% (95% CI: 10.9%, 13.0%)], and curiosity-driven initiation was highest among first-year students [12.1% (95% CI: 10.9%, 13.2%)]. Fashion-related reasons were most prominent among third-year students [1.7% (95% CI: 1.0%, 2.3%)], particularly among females [4.1% (95% CI: 1.0%, 7.1%)] (Table 2).

DISCUSSION

This study provides updated nationally

representative evidence on smoking behaviors among Chinese college students in 2025. The prevalence of current smoking declined modestly from 7.8% in 2021 to 7.3% in 2025 (3), suggesting a slight improvement that may reflect strengthened tobacco control policies, increased health awareness, and the expansion of smoke-free campus environments. However, the small magnitude of this change indicates that cigarette smoking prevalence has remained relatively stable in this population over recent years. Notably, while overall smoking decreased, CDS prevalence increased slightly from 4.7% to 4.8%. Although modest in magnitude, this trend may carry public health significance, as daily smokers tend to exhibit stronger nicotine dependence and greater difficulty quitting (4). In addition, medical students had a lower prevalence of both CS and CDS than non-medical students, which may be attributed to heightened health awareness and greater exposure to medical education.

A notable finding is the marked increase in smoking prevalence across age groups and the clear escalation from high school to college. In 2023, the prevalence of current smoking among Chinese senior high school

TABLE 2. Reasons for smoking initiation by grade and sex among college students in China, 2025.

Grade	Sex	Stress relief	Socializing	Curiosity	Fashion	Other reasons
Total	Overall	73.1 (72.2, 74.0)	10.8 (10.2, 11.4)	11.3 (10.6, 11.9)	1.3 (1.0, 1.6)	3.5 (3.2, 3.8)
	Male	72.7 (71.7, 73.6)	11.3 (10.7, 12.0)	11.3 (10.6, 12.0)	1.2 (0.9, 1.4)	3.5 (3.2, 3.9)
	Female	76.8 (74.6, 79.0)	6.2 (4.9, 7.6)	10.8 (9.5, 12.2)	2.7 (1.6, 3.7)	3.5 (2.7, 4.3)
First-year	Overall	74.7 (73.2, 76.2)	9.2 (8.3, 10.1)	12.1 (10.9, 13.2)	0.9 (0.5, 1.2)	3.2 (2.5, 3.8)
	Male	74.5 (72.8, 76.2)	9.7 (8.7, 10.7)	11.8 (10.5, 13.1)	0.8 (0.4, 1.1)	3.2 (2.5, 4.0)
	Female	76.5 (72.8, 80.1)	5.0 (3.0, 7.0)	14.2 (11.0, 17.4)	1.6 (0.4, 2.8)	2.8 (1.5, 4.0)
Second-year	Overall	72.4 (70.6, 74.1)	11.2 (10.1, 12.3)	11.4 (10.2, 12.7)	1.3 (0.9, 1.7)	3.6 (3.0, 4.3)
	Male	71.7 (69.8, 73.6)	11.6 (10.4, 12.9)	11.7 (10.3, 13.0)	1.2 (0.8, 1.6)	3.8 (3.0, 4.5)
	Female	78.6 (74.4, 82.8)	7.4 (4.4, 10.5)	9.2 (6.8, 11.7)	2.2 (0.7, 3.8)	2.5 (1.4, 3.6)
Third-year	Overall	71.3 (69.7, 72.9)	11.9 (10.9, 13.0)	11.1 (10.0, 12.3)	1.7 (1.0, 2.3)	4.0 (3.3, 4.6)
	Male	70.9 (69.2, 72.6)	12.6 (11.5, 13.7)	11.3 (10.0, 12.5)	1.4 (0.9, 2.0)	3.8 (3.2, 4.5)
	Female	75.1 (70.6, 79.6)	5.8 (3.8, 7.9)	9.8 (7.4, 12.3)	4.1 (1.0, 7.1)	5.2 (3.2, 7.2)
Fourth-year	Overall	75.0 (72.6, 77.3)	11.6 (9.8, 13.5)	8.7 (6.9, 10.4)	1.7 (1.0, 2.5)	3.0 (2.0, 3.9)
	Male	74.7 (72.3, 77.2)	12.1 (10.0, 14.2)	8.9 (7.1, 10.7)	1.5 (0.7, 2.3)	2.8 (1.8, 3.7)
	Female	76.9 (69.8, 84.0)	7.8 (4.3, 11.3)	7.0 (3.5, 10.5)	3.9 (0.7, 7.1)	4.4 (0.8, 8.0)

Note: Data are presented as weighted percentage (95% confidence interval) accounting for the complex survey design.

students was 3.9% (5), whereas it was already higher among college students aged ≤ 18 years (6.1%) and rose substantially to 14.1% among those aged ≥ 24 years. This pattern highlights the transition to college as a critical period for smoking uptake. The shift to a more autonomous environment, increased exposure to peer influence, and legal access to tobacco at age 18 years may collectively contribute to this increase. These findings suggest that, while multiple factors drive smoking initiation, the current legal age for tobacco sales may be insufficient to effectively prevent initiation during this vulnerable transition period.

Compared with other countries, smoking prevalence among Chinese college students appears to be at a moderate level. Data from the American College Health Association–National College Health Assessment (ACHA-NCHA) showed a prevalence of 10.3% among U.S. college students in 2025 (6), whereas a meta-analysis from Iran estimated a higher prevalence of 16% (7). However, these cross-country comparisons should be interpreted cautiously given differences in cultural contexts, tobacco control policies, and baseline smoking prevalence. Consistent with previous studies, smoking initiation among college students is primarily driven by social and psychological factors (8–9). Sex- and grade-based differences suggest distinct underlying patterns. Social motives were more commonly reported among males, possibly reflecting stronger peer influence, whereas females more often cited fashion-related reasons,

indicating a role for identity expression and social norms. Curiosity-driven initiation was more prevalent among first-year students, while stress-related smoking was more common among seniors, likely associated with academic and career pressures. These patterns underscore the need for targeted interventions, including peer-focused strategies, social norm campaigns, and programs addressing curiosity and stress across different student groups.

This study has several limitations. First, the use of self-reported data may introduce social desirability bias, potentially leading to underestimation of smoking prevalence. Second, the cross-sectional design precludes causal inference, and the observed associations should be interpreted with caution. Despite these limitations, the findings carry important implications for public health practice. The substantial increase in smoking prevalence during the transition from high school to college, together with the age-related gradients observed within college students, suggests that the current legal age for tobacco sales may be insufficient to prevent initiation. Several countries have adopted higher minimum legal ages for tobacco sales (e.g., 21 years or above) (10). A more recent example is the United Kingdom's proposed "smokefree generation" policy, which would ban tobacco sales to individuals born on or after January 1, 2009. Strengthening age-related tobacco control policies, combined with targeted interventions addressing peer influence, appearance-related perceptions, and grade-specific

needs — such as curiosity-driven experimentation among first-year students and stress-related smoking among seniors — could help reduce smoking uptake and advance tobacco control efforts in this population.

Conflicts of interest: No conflicts of interest.

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