Preplanned Studies

Smoking Prevalence in Urban and Rural Areas — China, 2024

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Summary

What is already known about this topic?

In 2018, the current and daily smoking prevalence among Chinese adults aged ≥15 years were 26.6% and 23.2%, respectively.

What is added by this report?

In 2024, China's smoking prevalence among adults aged ≥15 years was 23.2% (current) and 20.3% (daily), with current smokers averaging 15.8 cigarettes/day and daily smokers initiating daily smoking at 22.4 years. Slim cigarette use accounted for 32.9% of current smokers.

What are the implications for public health practice?

Sustained reduction in tobacco use requires multifaceted interventions and rigorous controls on tobacco industry tactics that disseminate deceptive marketing of purported harm-reduction products.

ABSTRACT

Introduction: Smoking is the second leading risk factor for disease burden in China. This study aims to analyze smoking behaviors among urban and rural areas in China to evaluate the effectiveness of current tobacco control measures and formulate strategic adjustments for achieving the Healthy China 2030 tobacco control targets.

Methods: This study analyzed smoking prevalence [with 95% confidence intervals (*CIs*)] using the 2024 China National Adult Tobacco Survey (NATS) data. Rao-Scott χ^2 tests compared prevalence differences across subgroups. Linear, nonlinear, and logistic regression models tested age-related trends in smoking behaviors.

Results: In 2024, the current and daily smoking prevalence among Chinese adults aged ≥15 years were 23.2% and 20.3%, respectively, with males exceeding females, peaking in 30–59 years. Rural areas had higher rates (24.9%, 22.1%) than urban areas (20.9%, 17.9%), particularly among high-income rural

households. Agricultural workers, government/public institution employees, and business/service workers showed higher rates than teaching staff and medical/health workers. Daily smokers initiated daily smoking at a mean age of 22.4 years, with younger smokers starting earlier. Current smokers consumed an average of 15.8 cigarettes/day, with higher consumption in rural than in urban areas. Slim cigarette use was reported by 32.9% of current smokers, with higher proportions in females, urban residents and adults aged <50 years.

Conclusions: Targeted strategies are required to sustain tobacco use reduction: addressing inadequate enforcement of control policies, focusing on smoking initiation, and implementing enhanced regulation of industry-promoted misleading "harm reduction" products (e.g., slim cigarettes).

Smoking emerged as China's second-leading cause of disability-adjusted life years in 2021 (*1*). Addressing this public health challenge, the Health China 2030 Plan aims to reduce smoking prevalence among adults aged ≥15 years to 20% by 2030 (*2*). However, comprehensive national data on smoking indicators have been unavailable since 2019. China CDC conducted the National Adult Tobacco Survey (NATS) targeting individuals aged ≥15 years in 2020, 2022, and 2024. This study presents the recent 2024 China NATS findings on current and daily smoking prevalence across urban-rural populations, with detailed occupational subgroup analysis. It further examines age-stratified patterns in smoking initiation age, mean cigarettes daily smoked, and slim cigarette use. These nationally representative data enable evidence-based evaluation of tobacco control progress while informing strategic adjustments to achieve the 2030 target.

The 2024 China NATS employed a five-stage stratified cluster sampling design across 31 provincial-

level administrative divisions (PLADs) in China, ensuring both national and provincial representativeness. First, 10 districts/counties were selected from each PLAD proportionally based on jurisdictional composition, using probability proportional to size (PPS) sampling. Second, 3 sub-districts/townships were similarly selected per sampled district/county through PPS. Third, 2 neighborhood committees/villages per sub-district/township were selected via household-based PPS sampling. Fourth, simple random sampling identified 120 households per neighborhood committee/village. Finally, trained interviewers conducted household surveys, registering all members aged ≥15 years, with one individual per household randomly selected through electronic randomization. The study achieved 193,007 valid responses (92.8% response rate).

The survey collected information on smoking behaviors, including frequency, product types, daily cigarette consumption, and initiation ages. Current smokers were defined as individuals who reported currently smoking tobacco, with daily smokers constituting those who reported daily use. Slim cigarette usage was determined through affirmative responses to purchasing behavior ("Did you last purchase slim cigarettes for personal use?"). Mean daily cigarette consumption and ages of smoking initiation and daily smoking initiation were also evaluated. Data collection utilized face-to-face structured tablet-based questionnaires with embedded logic and missing value checks.

Statistical analyses incorporated sampling design weights to ensure population representativeness. Prevalence estimates with 95% confidence intervals (*CIs*) were computed using survey-weighted methods. Subgroup disparities were evaluated through Rao-Scott χ^2 tests. Linear regression examined smoking initiation age trends with age; nonlinear (quadratic) regression assessed mean cigarettes daily smoked by age, and logistic regression assessed slim cigarette use percentage by age. The statistical significance was defined as two-tailed *P*<0.01. All procedures were implemented in SAS (version 9.4; SAS Institute Inc., Cary, NC, USA).

In 2024, the prevalence of current and daily smoking among Chinese adults aged ≥15 years was 23.2% and 20.3%, respectively, with significantly higher prevalence in rural areas (current: 24.9%; daily: 22.1%) than in urban areas (20.9%; 17.9%)

(*P*<0.001). Gender disparities were pronounced, with male prevalence substantially exceeding female rates nationally (current: 43.9% *vs.* 1.8%; daily: 38.6% *vs.* 1.3%) and across urban/rural subgroups. Age-specific analysis revealed the lowest prevalence in the 15–29 years (14.6%; 11.5%) and ≥70 years (19.2%; 17.0%) age groups, contrasting with elevated rates in intermediate age groups. Birth cohort patterns showed peak prevalence among those born in the 1960s–1980s (1960s: 26.3%; 23.9%; 1970s: 25.7%; 22.7%; 1980s: 27.4%; 23.8%) versus minimal rates in post-2000 cohorts (10.7%; 8.0%). Rural individuals born in the 1990s exhibited additional elevation in smoking rates (27.8%; 24.0%). Higher education levels correlated with reduced smoking prevalence in both urban and rural settings. Urban household income levels showed no significant prevalence differences, whereas rural higher-income households demonstrated increased smoking rates compared to lower-income groups (Tables 1–3).

Occupational stratification revealed elevated smoking prevalence among agricultural workers (current/daily: 26.9%/24.2%), government/public institution employees (31.7%/26.3%), and business/service workers (27.6%/23.7%), contrasting with lower rates among teaching staff (10.0%/8.5%) and medical/health workers (11.7%/8.9%). Urban-rural disparities persisted across occupations, with rural government/public institution employees (37.8%/30.8% *vs.* urban 26.3%/22.4%) and business/service workers (30.8%/27.2% *vs.* 25.2%/21.0%) showing significantly higher prevalence. Notably, rural teaching staff exhibited elevated daily smoking rates compared to their urban counterparts (12.2% *vs.* 4.8%) (Tables 1–3).

Current smokers initiated smoking at a mean age of 20.8 years (urban: 20.9; rural: 20.8), with earlier initiation observed in younger smokers (15–29 years: 18.0 *vs.* ≥70 years: 23.0). Males initiated smoking earlier than females (20.6 years *vs.* 26.1 years). Daily smokers began daily smoking at 22.4 years (urban: 22.4; rural: 22.3), with males starting earlier than females (22.2 *vs.* 27.2 years). The age-dependent initiation pattern among daily smokers (15–29 years: 19.0 *vs.* ≥70 years: 24.6) mirrored that of current smokers (Table 4).

Current smokers consumed an average of 15.8 cigarettes daily, with significantly higher consumption in rural areas (rural: 16.5 *vs.* urban: 14.5) and among males (males: 16.0 *vs.* females: 9.7). Daily

TABLE 1. Characteristics of participants and prevalence of current smoking and daily smoking among adults in China (Total), 2024.

Characteristics	N (weighted %)	Current smokers*		Daily smokers	
		Weighted % (95% CI)	P	Weighted % (95% CI)	P
All	193,007 (100.0)	23.2 (22.5, 23.9)		20.3 (19.5, 21.0)	
Sex			<0.001		<0.001
Male	93,615 (50.7)	43.9 (42.6, 45.2)		38.6 (37.2, 40.0)	
Female	99,392 (49.3)	1.8 (1.6, 2.1)		1.3 (1.1, 1.5)	
Age (years)			<0.001		<0.001
15–29	13,612 (17.9)	14.6 (13.5, 15.7)		11.5 (10.4,12.6)	
30–39	25,296 (19.6)	25.3 (23.5, 27.1)		21.7 (20.1, 23.3)	
40–49	29,223 (17.1)	27.2 (26.1, 28.3)		23.7 (22.6, 24.8)	
50–59	45,774 (19.4)	26.4 (25.4, 27.3)		23.7 (22.8, 24.7)	
60–69	43,010 (15.4)	25.0 (24.0, 25.9)		22.7 (21.8, 23.6)	
≥70	36,092 (10.5)	19.2 (18.2, 20.2)		17.0 (16.1, 17.9)	
Years of Birth			<0.001		<0.001
1930–1940s	18,208 (5.3)	17.6 (16.5, 18.7)		15.3 (14.4, 16.3)	
1950s	38,528 (11.4)	22.1 (21.1, 23.1)		20.0 (19.1, 21.0)	
1960s	46,791 (19.6)	26.3 (25.4, 27.2)		23.9 (23.0, 24.8)	
1970s	36,814 (15.9)	25.7 (24.7, 26.6)		22.7 (21.8, 23.7)	
1980s	28,581 (21.6)	27.4 (26.1, 28.7)		23.8 (22.5, 25.1)	
1990s	16,942 (13.6)	24.0 (21.9, 26.0)		20.1 (18.1, 22.1)	
2000s	7,142 (12.6)	10.7 (9.4, 11.9)		8.0 (6.8, 9.1)	
Education			<0.001		<0.001
Primary school or less	72,408 (24.6)	20.7 (19.8, 21.6)		18.8 (18.0, 19.6)	
Secondary school	59,940 (32.0)	28.1 (27.2, 29.0)		25.1 (24.2, 26.1)	
High school	28,225 (18.4)	24.0 (22.9, 25.2)		20.8 (19.7, 21.9)	
College /University	31,846 (25.1)	19.0 (17.7, 20.3)		15.2 (14.0, 16.4)	
Occupation			<0.001		<0.001
Agriculture workers	67,534 (25.2)	26.9 (25.7, 28.1)		24.2 (23.1, 25.3)	
Government/public institution staff	4,864 (3.4)	31.7 (28.3, 35.0)		26.3 (23.4, 29.1)	
Business/service employee	27,384 (20.2)	27.6 (26.2, 29.0)		23.7 (22.3, 25.0)	
Teaching staff	2,504 (2.1)	10.0 (7.5, 12.5)		8.5 (6.0, 10.9)	
Medical/health personnel	2,425 (1.9)	11.7 (8.8, 14.6)		8.9 (6.5, 11.4)	
Unemployed	24,987 (11.7)	16.7 (15.6, 17.8)		14.7 (13.6, 15.7)	
Retired	24,468 (8.5)	18.3 (17.1, 19.5)		16.4 (15.2, 17.6)	
Others	37,215 (27.0)	21.7 (20.6, 22.9)		18.8 (17.6, 20.0)	
Annual household income, CNY			0.985		0.356
0–9,999	45,367 (19.6)	23.6 (22.6, 24.6)		20.9 (19.9, 21.8)	
10,000–29,999	47,884 (24.5)	24.1 (23.2, 25.0)		21.4 (20.6, 22.3)	
30,000–49,999	32,676 (20.8)	23.5 (22.5, 24.6)		20.7 (19.7, 21.8)	
≥50,000	42,906 (35.1)	23.8 (22.4, 25.2)		20.4 (19.1, 21.8)	

Abbreviation: CNY=Chinese Yuan; CI=confidence interval.
* Current smokers include both daily smokers and less than daily smokers.

TABLE 2. Characteristics of participants and prevalence of current smoking and daily smoking among urban adults in China, 2024.

Characteristics	N (weighted %)	Current smokers*		Daily smokers	
		Weighted % (95% CI)	P	Weighted % (95% CI)	P
All	94,444 (42.9)	20.9 (19.9, 22.0)		17.9 (16.8, 18.9)	
Sex			<0.001		<0.001
Male	44,013 (50.4)	39.5 (37.4, 41.5)		34.1 (31.9, 36.2)	
Female	50,431 (49.6)	2.1 (1.7, 2.5)		1.4 (1.1, 1.7)	
Age (years)			<0.001		<0.001
15–29	7,589 (20.9)	13.5 (12.1, 14.9)		10.3 (8.9, 11.7)	
30–39	15,173 (22.8)	22.0 (19.5, 24.5)		18.6 (16.5, 20.7)	
40–49	15,252 (17.9)	25.4 (24.0, 26.8)		21.5 (20.0, 23.0)	
50–59	20,289 (17.1)	24.0 (22.6, 25.3)		21.1 (19.7, 22.4)	
60–69	19,730 (13.2)	23.9 (22.4, 25.4)		21.7 (20.3, 23.2)	
≥70	16,411 (8.1)	16.2 (15.0, 17.5)		14.4 (13.3, 15.6)	
Years of Birth			<0.001		<0.001
1930–1940s	8,257 (4.0)	15.1 (13.7, 16.4)		13.2 (11.9, 14.5)	
1950s	17,720 (9.0)	19.2 (17.7, 20.6)		17.3 (16.0, 18.5)	
1960s	20,705 (16.9)	25.1 (23.4, 26.8)		22.8 (21.2, 24.3)	
1970s	17,294 (15.7)	23.8 (22.4, 25.1)		20.1 (18.8, 21.5)	
1980s	16,589 (23.6)	24.7 (23.1, 26.2)		21.0 (19.3, 22.8)	
1990s	10,288 (16.5)	20.5 (17.9, 23.1)		16.5 (14.1, 18.9)	
2000s	3,590 (14.3)	10.1 (8.3, 11.8)		7.6 (6.1, 9.1)	
Education			<0.001		<0.001
Primary school or less	23,620 (13.7)	18.6 (17.2, 20.1)		16.8 (15.4, 18.2)	
Secondary school	28,152 (25.9)	25.6 (24.6, 26.7)		22.7 (21.6, 23.9)	
High school	17,657 (21.4)	22.8 (21.3, 24.3)		20.1 (18.7, 21.4)	
College /University	24,641 (39.1)	17.8 (16.3, 19.2)		13.9 (12.6, 15.3)	
Occupation			<0.001		<0.001
Agriculture workers	17,498 (9.7)	24.9 (22.8, 26.9)		22.2 (20.3, 24.0)	
Government/public institution staff	3,211 (4.3)	26.3 (22.8, 29.9)		22.4 (19.1, 25.6)	
Business/service employee	18,542 (26.9)	25.2 (23.6, 26.8)		21.0 (19.5, 22.6)	
Teaching staff	1,621 (2.5)	6.9 (5.0, 8.9)		4.8 (3.3, 6.4)	
Medical/health personnel	1,503 (2.3)	9.6 (7.6, 11.7)		6.5 (4.6, 8.4)	
Unemployed	11,339 (9.8)	15.8 (13.6, 17.9)		13.9 (11.8, 16.0)	
Retired	19,985 (13.9)	17.7 (16.3, 19.1)		15.8 (14.5, 17.1)	
Others	19,667 (30.6)	20.5 (19.3, 21.7)		17.4 (16.1, 18.7)	
Annual household income, CNY			0.274		0.022
0–9,999	14,746 (11.1)	22.0 (20.6, 23.4)		19.5 (18.1, 21.0)	
10,000–29,999	19,188 (17.9)	21.8 (20.2, 23.4)		19.1 (17.5, 20.7)	
30,000–49,999	17,293 (20.6)	21.6 (20.1, 23.0)		18.9 (17.5, 20.3)	
≥50,000	29,381 (50.4)	20.9 (19.4, 22.4)		17.4 (16.0, 18.8)	

Abbreviation: CNY=Chinese Yuan; CI=confidence interval.
* Current smokers include both daily smokers and less than daily smokers.

TABLE 3. Characteristics of participants and prevalence of current smoking and daily smoking among rural adults in China, 2024.

Characteristics	N (weighted %)	Current smokers*		Daily smokers	
		Weighted % (95% CI)	P	Weighted % (95% CI)	P
All	98,563 (57.1)	24.9 (24.0, 25.8)		22.1 (21.2, 22.9)	
Sex			<0.001		<0.001
Male	49,602 (51.0)	47.2 (45.8, 48.6)		42.0 (40.6, 43.3)	
Female	48,961 (49.0)	1.7 (1.3, 2.0)		1.3 (1.0, 1.6)	
Age (years)			<0.001		<0.001
15–29	6,023 (15.7)	15.8 (14.1, 17.4)		12.7 (11.2, 14.2)	
30–39	10,123 (17.2)	28.5 (26.5, 30.6)		24.9 (22.9, 26.8)	
40–49	13,971 (16.6)	28.6 (27.0, 30.2)		25.4 (23.9, 27.0)	
50–59	25,485 (21.1)	27.8 (26.6, 29.0)		25.3 (24.1, 26.6)	
60–69	23,280 (17.1)	25.6 (24.4, 26.8)		23.2 (22.0, 24.5)	
≥70	19,681 (12.4)	20.6 (19.3, 22.0)		18.3 (17.1, 19.5)	
Years of Birth			<0.001		<0.001
1930–1940s	9,951 (6.2)	18.8 (17.4, 20.3)		16.4 (15.1, 17.6)	
1950s	20,808 (13.1)	23.6 (22.3, 24.9)		21.4 (20.1, 22.7)	
1960s	26,086 (21.7)	27.0 (26.0, 28.1)		24.6 (23.5, 25.7)	
1970s	19,520 (16.1)	27.1 (25.8, 28.3)		24.6 (23.4, 25.9)	
1980s	11,992 (20.2)	29.8 (27.9, 31.7)		26.1 (24.4, 27.9)	
1990s	6,654 (11.3)	27.8 (25.1, 30.5)		24.0 (21.3, 26.7)	
2000s	3,552 (11.4)	11.2 (9.5, 12.9)		8.3 (6.6, 9.9)	
Education			0.493		0.160
Primary school or less	48,788 (32.8)	21.3 (20.3, 22.4)		19.4 (18.4, 20.4)	
Secondary school	31,788 (36.5)	29.4 (28.1, 30.6)		26.4 (25.2, 27.6)	
High school	10,568 (16.1)	25.2 (23.5, 27.0)		21.5 (19.8, 23.3)	
College /University	7,205 (14.6)	21.6 (19.6, 23.5)		17.8 (16.0, 19.5)	
Occupation			<0.001		<0.001
Agriculture workers	50,036 (36.7)	27.3 (25.9, 28.6)		24.6 (23.3, 25.8)	
Government/public institution staff	1,653 (2.7)	37.8 (32.7, 42.9)		30.8 (26.5, 35.0)	
Business/service employee	8,842 (15.2)	30.8 (28.8, 32.7)		27.2 (25.3, 29.1)	
Teaching staff	883 (1.8)	13.2 (8.8, 17.6)		12.2 (7.9, 16.5)	
Medical/health personnel	922 (1.6)	14.0 (8.4, 19.7)		11.6 (7.0, 16.1)	
Unemployed	13,648 (13.1)	17.3 (16.1, 18.5)		15.1 (13.9, 16.3)	
Retired	4,483 (4.5)	19.6 (17.1, 22.1)		17.7 (15.2, 20.2)	
Others	17,548 (24.4)	22.9 (21.1, 24.7)		20.1 (18.3, 21.9)	
Annual household income, CNY			<0.001		0.001
0–9,999	30,621 (25.4)	24.1 (22.9, 25.3)		21.3 (20.1, 22.4)	
10,000–29,999	28,696 (29.0)	25.1 (24.0, 26.1)		22.5 (21.4, 23.5)	
30,000–49,999	15,383 (20.9)	24.9 (23.3, 26.4)		22.0 (20.5, 23.5)	
≥50,000	13,525 (24.7)	27.9 (26.1, 29.7)		24.7 (23.0, 26.4)	

Abbreviation: CNY=Chinese Yuan; CI=confidence interval.
* Current smokers include both daily smokers and less than daily smokers.

TABLE 4. Age of smoking initiation, mean cigarettes daily smoked, and percentage of slim cigarette use among current smokers and daily smokers by age groups among Chinese adults in 2024.

Smoking behaviors	Age group	Mean (95% CI)				
		Total	Male	Female	Urban	Rural
Current smokers*	Age of smoking Initiation (years)					
	Total	20.8 (20.6, 21.0)	20.6 (20.4, 20.8)	26.1 (25.1, 27.2)	20.9 (20.5, 21.2)	20.8 (20.6, 21.1)
	15–29	18.0 (17.8, 18.3)	18.0 (17.8, 18.2)	19.1 (17.8, 20.4)	18.4 (18.1, 18.7)	17.7 (17.4, 18.0)
	30–39	20.2 (20.0, 20.5)	20.1 (19.8, 20.4)	23.3 (22.1, 24.6)	20.4 (20.0, 20.8)	20.1 (19.8, 20.4)
	40–49	21.1 (20.7, 21.4)	20.9 (20.6, 21.2)	26.9 (24.3, 29.5)	21.4 (20.6, 22.2)	20.8 (20.5, 21.1)
	50–59	21.2 (21.0, 21.5)	20.9 (20.7, 21.2)	29.6 (27.2, 32.0)	21.4 (21.0, 21.7)	21.1 (20.8, 21.5)
	60–69	21.6 (21.3, 22.0)	21.4 (21.1, 21.7)	28.8 (26.5, 31.1)	21.6 (21.1, 22.1)	21.7 (21.2, 22.1)
	≥70	23.0 (22.6, 23.4)	22.5 (22.1, 22.9)	29.2 (27.3, 31.1)	23.0 (22.4, 23.6)	23.0 (22.5, 23.5)
	$P_{for\ trend}$	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	Mean cigarettes daily smoked					
	Total	15.8 (15.4, 16.1)	16.0 (15.6, 16.3)	9.7 (8.9, 10.5)	14.5 (14.0, 15.0)	16.5 (16.1, 17.0)
	15–29	11.0 (10.3, 11.6)	11.3 (10.6, 11.9)	6.0 (4.7, 7.2)	9.9 (9.4, 10.5)	11.9 (10.8, 12.9)
	30–39	14.2 (13.8, 14.6)	14.4 (13.9, 14.8)	6.8 (5.4, 8.2)	13.4 (12.9, 13.9)	14.8 (14.1, 15.5)
	40–49	16.0 (15.5, 16.5)	16.2 (15.6, 16.7)	9.9 (8.4, 11.4)	14.3 (13.6, 15.0)	17.2 (16.6, 17.8)
	50–59	17.8 (17.3, 18.2)	17.9 (17.5, 18.4)	11.7 (10.3, 13.1)	16.9 (16.2, 17.7)	18.2 (17.7, 18.7)
	60–69	17.9 (17.4, 18.4)	18.1 (17.6, 18.6)	12.3 (11.0, 13.6)	17.1 (16.4, 17.7)	18.4 (17.7, 19.1)
	≥70	15.7 (15.2, 16.1)	15.9 (15.5, 16.4)	11.7 (10.6, 12.8)	14.8 (14.1, 15.4)	16.0 (15.5, 16.6)
	$P_{for\ trend}$	< 0.001	< 0.001	0.005	< 0.001	< 0.001
	Percentage of slim cigarette use (%)					
	Total	32.9 (30.9, 34.9)	32.0 (30.0, 34.0)	57.4 (51.3, 63.6)	39.6 (36.5, 42.7)	28.4 (26.0, 30.9)
	15–29	36.4 (31.4, 41.3)	34.4 (29.5, 39.3)	67.3 (48.7, 86.0)	41.1 (33.6, 48.5)	32.4 (25.8, 39.0)
	30–39	37.7 (34.4, 40.9)	36.8 (33.6, 39.9)	68.9 (55.4, 82.4)	44.5 (40.1, 48.8)	32.2 (28.0, 36.4)
	40–49	36.0 (32.9, 39.0)	35.2 (32.2, 38.2)	64.7 (54.3, 75.0)	45.0 (40.4, 49.7)	29.3 (25.9, 32.7)
	50–59	30.2 (27.8, 32.7)	29.5 (27.1, 31.8)	56.5 (44.9, 68.1)	35.6 (31.7, 39.5)	27.3 (24.3, 30.3)
	60–69	27.3 (25.0, 29.5)	26.8 (24.5, 29.0)	41.5 (31.8, 51.2)	31.5 (27.6, 35.4)	24.8 (22.0, 27.6)
	≥70	24.2 (21.8, 26.7)	23.3 (20.9, 25.7)	37.4 (28.2, 46.5)	28.1 (23.6, 32.6)	22.5 (19.6, 25.4)
	$P_{for\ trend}$	< 0.001	< 0.001	< 0.001	< 0.001	0.002
Daily smokers	Age of smoking Initiation (years)					
	Total	22.4 (22.2, 22.6)	22.2 (22.0, 22.4)	27.2 (26.1, 28.3)	22.4 (22.2, 22.7)	22.3 (22.0, 22.6)
	15–29	19.0 (18.7, 19.3)	18.9 (18.7, 19.2)	20.1 (18.7, 21.5)	19.2 (18.8, 19.7)	18.8 (18.5, 19.1)
	30–39	21.5 (21.3, 21.8)	21.5 (21.2, 21.7)	23.5 (22.3, 24.8)	21.9 (21.5, 22.2)	21.3 (20.9, 21.6)
	40–49	22.7 (22.4, 23.1)	22.7 (22.3, 23.0)	26.8 (24.8, 28.9)	23.1 (22.7, 23.5)	22.5 (21.9, 23.1)
	50–59	22.7 (22.4, 23.0)	22.5 (22.2, 22.8)	30.1 (28.3, 31.8)	22.8 (22.4, 23.3)	22.6 (22.2, 23.0)
	60–69	23.4 (23.0, 23.7)	23.1 (22.8, 23.5)	30.0 (27.3, 32.7)	23.3 (22.8, 23.8)	23.4 (22.9, 23.9)
	≥70	24.6 (24.3, 25.0)	24.1 (23.8, 24.5)	31.0 (29.1, 32.8)	24.6 (23.9, 25.3)	24.6 (24.2, 25.1)
	$P_{for\ trend}$	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	Mean cigarettes daily smoked					
	Total	17.3 (17.0, 17.6)	17.4 (17.1, 17.7)	12.1 (11.2, 13.0)	16.1 (15.7, 16.5)	18.0 (17.6, 18.4)
	15–29	12.8 (12.1, 13.4)	13.0 (12.4, 13.7)	7.6 (5.8, 9.4)	12.1 (11.3, 12.8)	13.3 (12.3, 14.4)
	30–39	15.7 (15.3, 16.1)	15.8 (15.4, 16.2)	10.3 (8.6, 12.0)	15.0 (14.5, 15.5)	16.3 (15.7, 16.9)
	40–49	17.5 (17.1, 18.0)	17.6 (17.2, 18.1)	12.9 (11.6, 14.1)	15.9 (15.2, 16.6)	18.7 (18.1, 19.2)
	50–59	19.1 (18.6, 19.5)	19.2 (18.7, 19.6)	13.8 (12.4, 15.2)	18.3 (17.5, 19.0)	19.5 (18.9, 20.0)
	60–69	19.2 (18.7, 19.7)	19.4 (18.9, 19.9)	14.3 (13.0, 15.6)	18.2 (17.6, 18.8)	19.8 (19.1, 20.4)
	≥70	17.0 (16.5, 17.5)	17.3 (16.8, 17.8)	12.8 (11.5, 14.0)	15.9 (15.3, 16.6)	17.5 (16.8, 18.1)
	$P_{for\ trend}$	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Continued

Smoking behaviors	Age group	Mean (95% CI)				
		Total	Male	Female	Urban	Rural
Daily smokers	Percentage of slim cigarette use (%)					
	Total	31.6 (29.5, 33.6)	30.9 (28.9, 32.9)	53.4 (46.4, 60.3)	37.5 (34.3, 40.7)	27.7 (25.3, 30.2)
	15–29	33.6 (29.0, 38.1)	31.7 (27.1, 36.4)	64.8 (41.5, 88.0)	35.9 (29.6, 42.2)	31.7 (25.3, 38.1)
	30–39	36.2 (32.8, 39.6)	35.5 (32.2, 38.8)	73.2 (61.1, 85.4)	42.7 (38.1, 47.4)	31.2 (26.8, 35.5)
	40–49	34.5 (31.3, 37.7)	34.0 (30.8, 37.3)	57.0 (46.2, 67.7)	43.0 (38.0, 48.0)	28.5 (24.7, 32.3)
	50–59	29.5 (27.0, 32.0)	28.9 (26.5, 31.4)	53.1 (41.3, 64.9)	34.6 (30.7, 38.6)	26.8 (23.7, 29.9)
	60–69	26.7 (24.4, 29.0)	26.4 (24.1, 28.7)	36.6 (26.8, 46.4)	30.2 (26.4, 34.1)	24.6 (21.7, 27.4)
	≥70	23.8 (21.3, 26.3)	23.0 (20.6, 25.4)	35.9 (26.5, 45.2)	27.2 (22.9, 31.5)	22.3 (19.2, 25.4)
	$P_{for\ trend}$	< 0.001	< 0.001	0.004	0.003	0.003

Abbreviation: *CI*=confidence interval.
* Current smokers include both daily smokers and less than daily smokers.

consumption demonstrated an inverted U-shaped relationship with age, peaking at 17.8 cigarettes in the 50–59 age group and 17.9 in the 60–69 age group before declining to 15.7 among those ≥70 years. Males and rural smokers consistently maintained higher daily consumption across all age groups. Daily smokers averaged 17.3 cigarettes daily, exhibiting identical male-female, urban-rural, and age-related consumption patterns as current smokers (Table 4).

Among current smokers, 32.9% used slim cigarettes, with significantly higher usage among females (57.4%) than males (32.0%) and in urban (39.6%) versus rural (28.4%) areas. Slim cigarette usage was more prevalent among individuals <50 years compared to older age groups, with female and urban predominance persisting across all age categories. Daily smokers followed similar patterns (overall: 31.6%; males: 30.9%; females: 53.4%; urban: 37.5%; rural: 27.7%) (Table 4).

DISCUSSION

In 2024, China's smoking prevalence among adults aged ≥15 years was 23.2%, exceeding the global average (17.0%), Singapore (14.8%), and the Philippines (20.8%) (3) but declining by 3.4% since 2018 (26.6%) (4). This decline may be attributed to enhanced tobacco control measures, including anti-tobacco campaigns, health education programs, tobacco advertising bans, and cessation support services (5). If the 2018–2024 downward trajectory and policy implementation persist, China is projected to achieve its Healthy China 2030 target by 2030. Smoking prevalence remains significantly higher among males than females and peaks in the 30–59 age group,

reflecting historical sociocultural norms associating smoking with masculinity and social interaction (6). Notably, the lower smoking rate among individuals born after 2000 may signal a potential long-term decline.

Smoking prevalence in rural China exceeds urban rates, highlighting its status as a critical public health challenge in low-income regions. This disparity may be attributed to insufficient awareness of tobacco-related harms and weaker implementation of tobacco control policies in rural areas (5). Our study also reveals higher smoking rates among rural populations with elevated annual household incomes compared to lower-income groups, suggesting either a positive correlation between economic status and smoking behavior or greater price sensitivity to tobacco products among rural residents (7). These findings imply that targeted taxation policies, particularly tobacco price increases, could effectively reduce smoking rates in rural areas.

Our findings reveal significant occupational disparities in smoking prevalence, with agriculture workers, government/public institution staff, and business/service employees exhibiting substantially higher rates compared to teaching staff and medical/health workers. Rural-urban gradients persist across occupational categories, particularly pronounced among government/public institution staff, business/service employees, and teaching staff. The nationwide implementation of smoke-free environments in China, including smoke-free schools and healthcare facilities, likely contributes to lower smoking rates among teachers and medical staff by restricting workplace smoking opportunities and reshaping social norms (8–9). However, the notably higher smoking rates observed in rural government/public institution staff

and business/service employees suggest uneven policy enforcement or persistent cultural barriers. Strictly implementing and supervising smoke-free policies in government/public institutions and in rural settings, and developing occupation-tailored cessation programs for high-risk groups could effectively mitigate these disparities.

Existing studies provide limited nationally representative data on demographic patterns of smoking initiation age, daily consumption, and slim cigarette use in China. Our findings demonstrate a delayed onset of daily smoking (22.4 years in 2024 versus 21.1 in 2018), aligning with the intensification of tobacco control policies since 2015 (*4,10*). However, the earlier initiation age among younger smokers highlights persistent vulnerabilities to tobacco exposure during youth. The average daily cigarette consumption among smokers in China remains unchanged from 2018 levels, with consistently higher consumption rates in rural areas and among older individuals (50–60 years), suggesting limited efficacy of cessation interventions for established smokers. The urban predominance of slim cigarette use, especially among adults under 50 years and females, likely correlates with tobacco industry strategies promoting these products as "harm-reduced" alternatives. These findings underscore the urgency for targeted interventions: prioritizing youth prevention programs, expanding rural cessation services, and enforcing stricter regulations on slim cigarette marketing to curb their appeal among urban youth.

This study has several limitations. The cross-sectional design may introduce recall bias in self-reported smoking initiation age, consumption patterns, and slim cigarette use. Additionally, underreporting may occur due to increased public awareness of smoking-related health risks.

In conclusion, China's adult smoking prevalence demonstrates a declining trend, attributable to enhanced tobacco control measures, though rates remain elevated compared to global averages. Persistent disparities — characterized by higher prevalence among males, rural populations, and specific occupational groups — reflect entrenched sociocultural norms and uneven policy enforcement. While the overall age of smoking initiation has been delayed, younger smokers continue to initiate smoking at earlier ages. The stable daily cigarette consumption and urban-predominant use of slim cigarettes underscore

unresolved public health challenges. Achieving sustained reduction in tobacco use requires targeted strategies: addressing inadequate enforcement of control policies and increasing cigarette prices, particularly in rural areas, preventing smoking initiation, and strictly regulating tobacco industry practices that promote misleading "harm-reduced" products.

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