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A Comparative Assessment of Tobacco Consumption Among Adults in India: SAGE Wave 1 and Wave 3

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Abstract

Objective: This study examines changes in tobacco consumption among Indian adults aged 18 to 49 by comparing nationally representative data from SAGE Wave 1 (2007-08) and Wave 3 (2019-20). The objective is to assess changes in daily, non-daily, non-current, and never-use patterns across key socio-demographic groups.

Method: Data were drawn from WHO's Study on Global Ageing and Adult Health (SAGE) covering six states consistently across both waves. The analysis focused on adults aged 18 to 49 and evaluated four indicators: current daily tobacco use, non-daily use, non-current use, and never-use. Proportions were compared across age, sex, marital status, residence, caste, religion, education, and wealth quintiles using Z-testes to assess statistical significance.

Results: Daily tobacco use declined sharply across all demographic groups, most prominently among young adults (21% to 4%) and men (60% to 16%) Substantial reductions were also observed by caste, religion, education, and wealth categories, indicating board behavioural change. In contrast, non-daily use showed minimal change. Non-current use increased markedly across age groups, rising form 1-2% to 14-26%, while never-use also rose substantially especially among adults aged 30 to 49, men and marginalized socioeconomic groups. These findings suggest declining initiation, increased quitting, and a major reduction in tobacco dependence over time.

Conclusion: Tobacco consumption among Indian adults has shifted markedly, with significant reductions in daily use and rising quitting and non-initiation trends. However, persistent occasional use and socioeconomic disparities highlight the need for targeted, equity-focused interventions to sustain progress and reduce remaining gaps in tobacco control.

Keywords: Tobacco; SAGE India; Daily tobacco use; Non-daily tobacco use; Tobacco cessation; Never-users; Public health.

Introduction

The English word tobacco derives from the Spanish Tabaco (Ernst, 1889). Its exact origin remains debated, though linguistic evidence suggests a partial connection to Taíno, the Arawakan language of the Caribbean. In Taíno, tabaco referred either to a roll of tobacco leaves (as documented by Bartolomé de las Casas in 1552) or to tabago, a Y-shaped pipe used for inhaling smoke (as described by Oviedo), while the leaves themselves were called cohiba (Hilton, 2011; Ernst, 1889). Tobacco use is now recognized as a major determinant of global morbidity and mortality (WHO, 2022).

Globally, tobacco use remains one of the most pressing public health challenges, with an estimated 1.18 billion people regularly smoking in 2020 and adult smoking prevalence recorded at 32.6% among men and 6.5% among women, contributing to nearly 7 million deaths each year (Dai et al., 2022). Smoking and smokeless tobacco use shows large geographic disparities, ranging from a smoking prevalence of 1.1% in Ghana to 50.6% in Kiribati, and smokeless tobacco use peaking at 65.4% in Papua New Guinea (Theilmann et al., 2022). Evidence from sub-Saharan Africa (SSA) shows relatively lower but heterogeneous use, with weighted lifetime smoking prevalence at 8.8%, past-year use at 10.8%, and daily smoking at 3.5%, while adolescent rates remain notably lower than adult rates (Belete et al., 2025). The global burden continues to escalate, with the WHO estimating over 7 million tobacco-attributable deaths annually in 2025, projected to exceed 8 million by 2030 (WHO, 2025; Sakthisankaran, 2024). Nearly 80% of the world's 1.3 billion tobacco users live in low and middle-income countries (LMICs), where health losses and economic costs are greatest. India represents a major share of this burden, accounting for 1.0 to 1.35 million tobacco related deaths each year, amounting to nearly one-sixth of global fatalities (McKay et al., 2015; Sakthisankaran, 2024). The patterns of tobacco consumption in India illustrate a significant diversity and depth of usage: cigarettes and bidis each represent 15.1% of smoked products, whereas betel quid containing tobacco (40.3%) and pan masala (28.6%) are predominant in smokeless forms (Hussain et al., 2017).

NFHS-5 data reveal that 9% of women and 38% of men aged 15 and above use tobacco, with prevalence markedly higher in rural areas, where tobacco users are 1.6 times more likely to smoke compared to urban populations, and behavioural determinants such as age, gender, and knowledge of risks significantly shape use patterns (Sarkar, 2024). Although India has witnessed a decline in tobacco use among men from 44.5% to 32.6% between 2016 and 2021 state level disparities have widened, especially in the north-eastern states, mirroring similar trends observed in alcohol consumption (Rajpal, 2025). Together, these global and national trends underscore the magnitude and complexity of the tobacco epidemic, illustrating how widespread use continues to drive substantial mortality worldwide while imposing a disproportionate and escalating health burden on India.

Beyond direct consumption, exposure to second-hand smoke (SHS) is also a major public health concern. According to WHO (2025), SHS causes approximately 1.2 million deaths globally each year. In India, SHS account for the highest exposure (38.7%), followed by workplaces (30.2%), public transport (13.3%), and restaurants (7.4%) (GATS-2, 2016–17). Children are particularly vulnerable, with nearly half of the global child population exposed and an estimated 65,000 child deaths annually attributed to SHS. Consistent with these findings, Hussain et al. (2017) report that 45.7% of study participants were exposed to SHS at home, although most were aware of its hazards and expressed willingness to quit in the future. Tobacco use is linked to a wide spectrum of health consequences, including cancers (oral, lung and others), chronic respiratory diseases such as COPD, cardiovascular disorders, reproductive health complications and oral lesions. It is also associated with autoimmune disorders and impaired immunity (Ruhil, 2019; Mishra et al., 2012). Evidence from urban slum populations shows that COPD prevalence among tobacco users is 27.3%, gastritis 25.5%, and oral leukoplakia 25.5%, with disease severity correlating strongly with nicotine dependence (Saha et al., 2018). These health risks are shaped by socioeconomic and contextual factors: tobacco use is significantly higher among rural populations, individuals with low education, and those from weaker socioeconomic backgrounds, partly due to limited awareness and weaker enforcement of tobacco control laws (Sakthisankaran, 2024). Among youth, early initiation is influenced by peer pressure, social norms, limited understanding of long-term harms and skepticism about the effectiveness of existing policies (Ghose et al., 2019).

In this context, tobacco control policies play a crucial role. Modeling studies indicate that full implementation of the WHO Framework Convention on Tobacco Control (FCTC) could prevent up to 25% of cardiovascular deaths in India, equivalent to nine million lives saved between 2013 to 2022 (Basu et al., 2013). While current measures such as taxation, pictorial warnings and public information campaigns are essential, enforcement remains uneven, particularly for smokeless tobacco and bidi markets (Mishra et al., 2012; Sakthisankaran, 2024). Nicotine replacement therapy (NRT) and counseling improve quitting success, yet access remains limited, especially in rural settings. Low awareness of smokeless tobacco risks among youth and persistent gaps in public understanding further challenge control efforts. Together, these observations point to a complex but evolving landscape of tobacco use in India. To better understand how tobacco consumption patterns have changed over time across population groups, the present study analyses SAGE Wave 1 (2007–08) and Wave 3 (2019–20) data, focusing on 18-49 years age specific differences in tobacco use among adults.

Methodology

This study examines the evolution of tobacco use patterns over a time in India by analysing nationally representative data from SAGE Wave 1 (2007-08) and Wave 3 (2019-20) for adults aged 18 to 49 years. The study on Global AGEing and Adult Health (SAGE), which is conducted by the WHO in partnership with IIPS, offers extensive data on individuals aged 50 and above, while also incorporating a comparative sample of younger adults. Wave 1 comprised 9,626 households and 11,230 individuals (6,560 aged 50 and above; 4670 aged 18-49), whereas Wave 3 included 6,073 households and 7,885 individuals across the same six states; Assam, Karnataka, Maharashtra, Rajasthan, Uttar Pradesh, and West Bengal, to maintain comparability. Two age groups were considered; adults aged 50 and above and younger adults aged 18-46. The key indicators evaluated include the prevalence of current tobacco use (both smoked and smokeless), daily tobacco consumption among users, and the types of products utilized (Cigarettes, bidis, and smokeless tobacco).

Result

This section presents changes in tobacco consumption among adults aged 18 to 49 between 2007 and 2019–20 across four categories. Table 1 shows Socio-Demographic Differences in Current Daily and Non-Daily Tobacco Users Among Adults (Aged 18 to49). Current daily tobacco use declined significantly across all socio-demographic groups, marking a substantial six states reduction in tobacco dependence. Daily use dropped sharply across age groups from 21% to 4% among adults aged 18–29, 39% to 6% among those aged 30–39, and 52% to 9% among those aged 40–49 years. Both sexes experienced large reductions, with prevalence falling from 60% to 16% among men and from 15% to 1% among women. Similar declines were observed across marital categories, including the never married (23% to 5%), currently married (40% to 8%), and widowed (40% to 2%), while the "other" group showed no significant change. Urban and rural areas showed parallel improvements, with daily use decreasing from 27% to 5% and 41% to 8% respectively. Across caste and religious groups, the reductions were equally prominent, particularly among Scheduled Tribes (45% to 9%) and Muslims (44% to 6%). Declines were also consistent across all education and wealth levels, with the steepest drops among those with lower education and in the poorest quintiles. In contrast to these widespread reductions in daily use, non-daily tobacco use showed minimal change across most demographic groups, indicating slower behavioural shifts among occasional users. Significant decline occurred only among adults aged 40–49 (2% to 1%), while younger age groups showed no change. Patterns remained stable for both sexes and for most marital, residential, caste and religious categories, with only marginal declines observed among the currently married, the Other caste group and the highest wealth quintile. Overall, while daily tobacco consumption decreased significantly, occasional use remained largely unchanged, indicating that reductions in heavy or habitual use have progressed faster than declines in intermittent or social tobacco consumption.

Table 1. Socio-Demographic Differences in Current Daily and Non-Daily Tobacco Use Among Adults (Aged 18–49), 2007 and 2019–20

Characteristics	Current Daily Tobacco				Tobacco user, not daily			
	2007	2019-	Z-	p-value	2007	2019-	Z-	p-value
Age								
18-29	21.1	4.4	6.478		3.0	2.8	0.178	0.859
30-39	38.7	5.8	11.939	0.000	2.5	2.3	0.220	0.826
40-49	51.5	9.3	17.106		2.2	0.7	2.250	0.024
Sex								
Male	59.5	16.3	15.580	0.000	3.7	2.9	0.793	0.428
Female	14.8	0.8	10.242		1.3	0.7	1.333	0.182
Marital status								
Never married	22.9	5.0	5.518		2.9	2.9	0.000	1.000
Currently married	39.6	7.9	18.286	0.000	2.6	1.5	1.962	0.050
Widowed	39.7	1.7	5.221		0.4	0.0	0.452	0.651
Other1	30.9	0.0	1.590	0.112	7.3	0.0	0.684	0.494
Residence								
Urban	26.8	4.7	7.299	0.000	2.0	1.3	0.716	0.474
Rural	40.9	8.4	18.644		2.7	1.8	1.569	0.117
Caste								
Scheduled tribe	45.3	9.1	6.989		1.5	1.8	-0.225	0.822
Scheduled caste	43.9	13.2	8.820	0.000	2.9	3.1	-0.159	0.874
Other[2]	35.0	5.2	16.744		2.5	1.2	2.243	0.025
Religion								
Hindu	36.9	7.4	17.718		2.4	1.9	0.927	0.354
Muslim	43.8	5.6	7.997	0.000	3.0	0.3	1.739	0.082
Other[3]	29.0	6.7	3.958		4.4	0.0	1.893	0.058
Education								
No formal	41.7	10.4	9.808		2.1	2.2	-0.106	0.916

Less than primary	49.1	8.5	8.760		2.7	1.6	0.754	0.451
Primary school	37.4	6.2	9.390		3.2	0.6	2.262	0.024
Secondary school	36.9	8.3	7.827		2.1	2.4	-0.265	0.791
High school	34.8	4.8	7.581		2.7	1.9	0.581	0.562
College and	19.5	3.2	4.491	0.000	3.5	0.9	1.556	0.120
Wealth quintile								
Lowest	48.4	10.3	10.233		2.7	3.5	-0.636	0.525
Second	47.2	5.5	12.203		2.4	2.1	0.282	0.778
Middle	36.1	8.8	8.658	0.000	2.4	1.4	0.997	0.319
Fourth	33.7	4.6	8.555		2.6	1.1	1.319	0.187
Highest	18.7	7.3	3.976		2.5	0.5	1.796	0.072
Total	37.5	7.2	19.933		2.5	1.6	1.776	

Table 2 shows Socio-Demographic Differences in Non-Current and Never Tobacco Use among Adults (Aged 18–49), 2007 and 2019–20. Non-current use rose severely across age groups, from 1% to 14% among adults aged 18–29 and from 2% to 19% among those aged 40–49. Both men and women showed substantial gains, with prevalence increasing from 2% to 25% among males and from 1% to 11% among females. Similar upward trends were evident across marital groups, including the never married (2% to 7%), currently married (1% to 19%), and widowed (1% to 16%). Urban and rural residents alike exhibited strong improvements urban (2% to 11%) and rural (1% to 20%), with particularly large gains seen among Scheduled Tribes (1% to 26%), Scheduled Castes (1% to 15%), and Muslims (1% to 28%). Increases were also consistent across all education levels and wealth quintiles, with the most pronounced improvements occurring among individuals in the lowest wealth categories. Complementing these shifts, the share of never tobacco users also rose significantly, reflecting reductions in tobacco initiation over time. The greatest increases occurred among middle-aged adults 30–39 years (57% to 76%) and 40–49 years (45% to 72%) while the smallest and non-significant change was observed among younger adults aged 18–29. Both men (35% to 56%) and women (83% to 87%) showed improvements, though women already had a high baseline of never-use. Across marital categories, never-use increased among the never married (72% to 85%), currently married (56% to 72%), and widowed (59% to 83%). Significant gains were also evident across both urban (70% to 83%) and rural (55% to 70%) areas, as well as among most caste and religious groups, with Scheduled Tribes showing a non-significant rise. Improvements spanned all education and wealth groups, from those with no formal schooling (55% to 69%) to individuals with college education or above (75% to 91%). Together, these patterns indicate a notable change toward quitting and reduced initiation, particularly among middle-aged adults, men and socioeconomically disadvantaged groups, contributing substantially to the overall decline in tobacco use in India.

Table 2. Socio-Demographic Differences in Non-Current and Never Tobacco Use Among Adults (Aged 18–49), 2007 and 2019–20

Characteristics	**Not current tobacco user**				**Never Tobacco user**			
	2007	**2019-20**	**Z-value**	**p-value**	**2007**	**2019-20**	**Z-value**	**p-value**
Age								
18-29	0.9	14.4	-12.32	0.00	75.0	78.4	-1.196	0.232

30-39	1.8	16.4	-12.19		57.1	75.6	-6.446	0.000
40-49	1.7	18.5	-13.62		44.6	71.5	-10.680	
Sex								
Male	2.1	25.2	-14.30	0.00	34.6	55.7	-7.663	0.000
Female	0.8	11.2	-16.19		83.1	87.3	-2.760	0.006
Marital status								
Never married	1.9	6.6	-3.23	0.00	72.2	85.4	-3.669	0.000
Currently married	1.4	18.9	-22.36		56.4	71.7	-8.481	
Widowed	0.5	15.5	-5.41		59.4	82.8	-3.135	0.002
Other1	0.0	13.1	-2.25	0.02	61.8	86.9	-1.200	0.230
Residence								
Urban	1.6	11.1	-7.55	0.00	69.7	82.9	-4.112	0.000
Rural	1.4	19.7	-22.24		54.9	70.2	-8.351	
Caste								
Scheduled tribe	0.5	26.1	-9.72	0.00	52.7	63.0	-1.929	0.054
Scheduled caste	1.3	14.7	-9.27		51.8	69.1	-4.795	0.000
Other[2]	1.6	16.8	-18.69		60.9	76.9	-8.477	
Religion								
Hindu	1.6	15.9	-19.32	0.00	59.1	74.8	-8.999	0.000
Muslim	0.7	28.1	-12.24		52.6	66.0	-2.738	0.006
Other[3]	1.9	10.9	-3.11		64.7	82.4	-2.845	0.004
Education								
No formal education	1.3	18.5	-13.99	0.00	55.0	69.0	-4.287	0.000
Less than primary	1.1	24.1	-9.46		47.0	65.9	-3.946	
Primary school	1.7	24.3	-12.09		57.7	68.9	-3.155	0.002
Secondary school	0.9	12.7	-8.19		60.2	76.5	-4.321	0.00
High school	2.1	14.2	-6.67		60.5	79.1	-4.457	
College and above	2.0	5.4	-1.96	0.05	75.0	90.6	-3.759	
Wealth quintile								
Lowest	1.7	27.3	-13.87	0.00	47.1	58.8	-3.097	0.002
Second	1.4	21.0	-12.07		49.0	71.4	-6.388	0.000
Middle	1.8	15.8	-9.36		59.7	74.1	-4.307	
Fourth	1.4	15.5	-9.48		62.4	78.8	-4.585	
Highest	0.9	7.7	-6.06		77.8	84.5	-2.110	0.035
Total	**1.5**	**17.0**	**-0.322**		**58.5**	**74.2**	**-9.862**	

Discussion

Current daily tobacco users among adults aged 18-49 declined sharply between 2007 and 2019-20, reflecting the impact of taxes, warnings, smoke-free laws, and awareness campaigns (MoHFW, 2019; WHO, 2021). The Largest reductions occurred among young adults, consistent with stronger youth-focused policies and rising awareness (Grover. S, 2020; Basu et al., 2013). Gender patterns also show progress, with a 16.3% decline in daily use slightly lower than the 20% reported by Bhandari et al. Non-daily users in 2019-20 were also lower than GATS-2 estimates for both men and women. Daily tobacco users remained especially low among widowed individuals, contrary to Ruhil, (2019) findings. There is a sharp decline in daily tobacco users in both urban and rural areas, consistent with earlier evidence of higher but gradually decreasing use in rural users driven by socioeconomic and cultural factors (Verma M et al., 2023). Daily and non-daily tobacco users increased across caste groups, especially among ST and SC/Other groups, including persistent socioeconomic disadvantages, cultural norms, and limited cessation access (Bhan, N 2016; Nayak, G et al., 2023). Daily user also declined across all education levels, greatest among the uneducated, showing the protective role of education (Singh, S. K et al., 2023; Gupta, S et al., 2024). Wealth gradients persisted with the steepest decline in the lowest quintile (48.4%- 0.3%) underscoring strong control measures and socioeconomic disparities (WHO; Lahoti, S., et al., 2021).

Non-current and never-tobacco user increased across all age groups, with the most notable rise among adults aged 40-49, indicating both lower initiation rates and higher cessation (GATS 2010; 2016-17). According to religion, non-current and never-user rose due to reduced initiation and stronger control measures (Lahoti, S., et al., 2021) ; tobacco user fell across all education levels, largest among the less educated, while never-user rose among the highly educated, indicating health awareness and anti-tobacco measures (Singh, S. K et al., 2023). With the largest gains among poorer adults, though wealthier adults still had the highest never-use, reflecting persistent socioeconomic disparities (Thakur, J. S et al., 2013). In India, the National Tobacco Control Programme (NTCP), initiated in 2007-08 by the Ministry of Health and Family Welfare, stands as the premier initiative in the country aimed at decreasing tobacco consumption. In addition to this national program, individual states also executed their own state specific tobacco enforcement strategies, which further aid in the regulation of tobacco use.

Conclusion

Analysis of SAGE Wave-1 and Wave-3 shows a decline in daily tobacco use among Indian adults (18-49 years) and a rise in non-current and never-users, indicating reduced initiation and higher quitting rates, especially among men, middle-aged, and marginalized groups. Non-daily use changed little, suggesting occasional use is less affected by current policies. Persistent socioeconomic and educational disparities highlight the need for targeted interventions to curb occasional use, support cessation, and prevent initiation.

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Declaration by Authors

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