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A Study on Prevalence and Pattern of Tobacco Usage among Adults in Manikeshwari, Kalaburagi, Karnataka, India: A Cross-Sectional Study

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ABSTRACT

Background: Tobacco use in India is a significant public health challenge, contributing to high morbidity and mortality. Despite strict regulations, widespread cultural acceptance and accessibility continue to drive its prevalence across diverse population groups. The objective is to estimate prevalence of tobacco, its usage patterns, and their socio-demographic associations among adults in Manikeshwari, Kalaburagi."

Methods: A cross-sectional study was conducted for 2 months among adults residing in Manikeshwari using a pre-tested questionnaire administered through face-to-face interviews. The sample size of 350 was calculated based on a 33.5% prevalence in Kalaburagi, with participants selected through cluster sampling. Data from 310 participants were analyzed for completeness using Jamovi software.

Results: Among 310 participants, 41.9% had used tobacco at least once, with 29.7% currently using it. Most smokers (54.9%) commenced between 20 and 30, whereas 23.6% started earlier. 47.6% of users had been consuming tobacco for less than 10 years. Smokeless tobacco was utilized by 63% of the participants. With addiction as the main hurdle (48.9%), only 13.9% of current users are willing to quit. Smoking was found to be associated with gender (p-value: <0.001), religion (p-value: 0.02), marital status(p-value:<0.03), education(p-value:<0.001), and occupation(p-value:<0.001).

Conclusion: The study shows high tobacco use, mainly smokeless forms, starting in early adulthood, influenced by demographic and socio-cultural factors. Targeted interventions and stricter enforcement of sales bans and no-tobacco zone regulations are recommended.

Keywords: Epidemiology, Tobacco Use Disorder, Adults, Urban population

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Introduction

Tobacco use is a leading global cause of preventable morbidity and mortality, with the majority of users starting during adolescence and establishing long-term habits by their late twenties. The Southeast Asian Region had the highest prevalence of tobacco use globally in 2020, with India contributing significantly to this burden. According to the Global Adult Tobacco Survey (GATS-2), 28.6% of Indian adults aged 15 and above, approximately 266.8 million people, currently use tobacco products (1,2). Tobacco imposes a heavy health and economic burden, consuming about 5% of India's health spending in 2017–18, with smoking responsible for 74% of these costs and men contributing to 91% of the economic impact (3).

Despite the existence of tobacco control measures such as the Cigarettes and Other Tobacco Products Act (COTPA), taxation, bans on advertising, and public smoking restrictions, tobacco continues to be widely used in India. Its affordability, accessibility, and persistent myths regarding its benefits contribute to its continued prevalence (4,5). In addition to active tobacco use, second-hand smoke exposure remains a significant concern, with four in ten Indian households reporting at least one tobacco user (6).

Tobacco is consumed in both smoked and smokeless forms in India, with beedis (48%) and chewing tobacco (38%) being more commonly used, compared with cigarettes (14%) (2). These patterns vary significantly across regions, socioeconomic strata, and cultural backgrounds. Importantly, tobacco consumption is linked to approximately 56.4% of cancer cases in men and 44.9% cases in women in India (7). The country ranks second globally in total tobacco consumption, after China, with regional disparities in prevalence. In Karnataka, 27.1% of men and 8.5% of women use tobacco, while in Kalaburagi district, the prevalence is even higher, 33.5% among men and 11% among women (8).

Most studies have focused on national and urban populations, leaving rural and semi-urban areas underrepresented. The lack of region-specific data hinders targeted interventions tailored to local needs. Semi-urban districts like Kalaburagi, where tobacco use remains high despite national control measures, are particularly neglected. There is limited knowledge about how sociodemographic factors — including age, education, occupation, income, and caste — influence tobacco use in these settings. Research rarely addresses local enforcement of tobacco laws or the community's knowledge, attitudes, and practices around tobacco consumption. Early initiation of tobacco use is linked to higher dependence and lower quit rates, underscoring the need for locally focused data (9). This study aims to estimate the prevalence and patterns of tobacco use in Kalaburagi and examine their association with sociodemographic factors, providing essential evidence to inform effective, localized public health strategies.

Methods

A cross-sectional study was conducted among residents of Manikeshwari Kalaburagi who aged >19 for a period of two months in 2024. Based on the prevalence of tobacco usage in Kalaburagi, which was found to be 33.5%, the sample size was calculated with a 95% confidence level and 5% permissible error by using the formula, $n = z^2 pq/ d^2$ (9). The sample size was found to be 342, which was approximated to 350. The participants were chosen through two-stage cluster sampling. In the first stage, Manikeshwari, having a population of 46290, was divided into 4 wards. During the second stage of sampling, to get a sample of 350, 88 people were chosen from each ward through systematic random sampling by selecting every 5th house. The individuals who were 19 and above, and residents of Manikeshwari for at least two years who were willing to participate in the study were included. This was while people who were deaf, dumb, had psychiatric problems, denied consent, and entered incomplete data were excluded from the study. Verbal consent was obtained from participants before the initiation of study.

Data collection method

A door-to-door survey was conducted in the

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urban field practice area of Gulbarga Institute of Medical Sciences (GIMS) in Manikeshwari, Kalaburagi, and participants were included based on inclusion criteria. The study was explained to them and verbal consent was obtained. The participants were interviewed using a pre-designed, pre-tested, and semi-structured questionnaire (7,10,11). It consisted of two sections: sociodemographic profile and pattern of usage of tobacco products. Participants were categorized as per the operational definitions provided by WHO (12).

Statistical methods

Data were entered in a Microsoft Excel spreadsheet and analyzed using Jamovi software 2.4.14. Results were analyzed with frequency and proportion. The chi-square test was used to find out the association between socio-demographic profile and tobacco usage.

Results

Table 1 presents a detailed overview of the participants' sociodemographic characteristics. Over half of the individuals (55.4%) aged between 20 and 40, with males comprising a significant majority at 76.2%. 51.6% completed either secondary or higher secondary schooling, while 36.5% comprised skilled and semi-skilled workers. Marital status shows that most participants (76.8%) were married, wherein 66.1% lived in a nuclear family compared to joint families (23.5%) and three-generation families (10.3%). Based on the modified BG Prasad classification, a substantial portion fell within the middle (35.8%) and lower-middle (31.6%) socioeconomic class, while only a small fraction (6.5%) belonged to the upper class.

Table 1. Sociodemographic details of participants

Socio-demographic profile	Category	Frequency (N = 310)	Percentage (%)
Age (in years)	20-30	80	25.8
	30-40	92	29.7
	40-50	63	20.3
	50-60	39	12.6
	> 60	36	11.6
Gender	Male	237	76.5
	Female	73	23.5
Education	Illiterate	63	20.3
	Primary	38	12.3
	Secondary and higher secondary	160	51.6
	Graduate and above	49	15.8
Occupation	Professional	30	9.7
	Semi Professional	31	10.0
	Skilled/ semi- skilled	113	36.5
	Unskilled	49	15.7
	Unemployed	87	28.1
Marital status	Married	238	76.8
	Unmarried	58	18.7
	Widowed/separated	14	4.5
Family type	Nuclear	205	66.2
	Joint family	73	23.5
	Three generation family	32	10.3
Religion	Hindu	296	95.5
	Muslim	14	4.5
Caste	General	78	25.2
	OBC	29	9.4
	SC/ST	203	65.4

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Socio-demographic profile	Category	Frequency (N = 310)	Percentage (%)
Socio-economic class (according to modified B.G. Prasad classification)	Upper class	20	6.5
	Upper middle class	57	18.4
	Middle class	111	35.8
	Lower middle class	98	31.6
	Lower class	24	7.7

Table 2 summarizes tobacco use history among participants. Around 41.9% have used tobacco at some point, and most users (54.9%) began at an early age (20–30). Nearly half (47.6%) used tobacco for under 10 years, 34.6% for 10–20 years, and a few reported longer usages. The influence of family and social circles on tobacco use is evident, as 42.3% of participants reported having family or friends who use tobacco. Smokeless tobacco is the most prevalent (65.3%), followed by smoking forms (23.8%) and dual use (10.7%).

Table 2. History of tobacco usage

History	Categories	Frequency (N = 310)	Percentage (%)
Have you used tobacco at any time in your life?	Yes	130	41.9
	No	180	58.1
Does anyone in your family or friends use tobacco?	Yes	131	42.3
	No	179	57.7
	Categories	**Frequency (N = 130)**	**Percentage (%)**
Age of onset of tobacco usage (in years) (N=130)	10-20	31	23.8
	20-30	72	55.4
	30-40	20	15.4
	> 40	7	5.4
Duration of use (in years)	< 10	62	47.7
	10-20	45	34.6
	20-30	15	11.5
	≥ 30	8	6.2
Type of tobacco used	Smoking	31	23.9
	Smokeless	85	65.3
	Mixed type	14	10.8

Table 3 shows the prevalence and determinants of tobacco usage based on age, gender, and type of tobacco. The data revealed that 29.7% of the participants are current tobacco users, with the highest prevalence (33.6%) among young adults within 20–30 age group. There is a significant gender disparity in tobacco use, with males comprising 94.5% of current users, while females account for only 5.4%. Regarding the type of tobacco used, smokeless tobacco is the predominant choice (63%), followed by smoking (23.9%) and mixed-use (13.1%). Most users-initiated tobacco use between the ages of 20–30 (55.4%), while 23.8% began as early as 10–20. In terms of duration, nearly half (47.7%) have been using tobacco for less than 10 years. These findings highlight early initiation, male predominance, and a strong preference for smokeless tobacco.

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Table 3. Prevalence and determinants of tobacco usage

Variables	Category	Number (n = 92)	Percentage (%)
Do you currently use tobacco?	Yes	92	29.7
	No	218	70.3
Age (In Years)	20-30	31	33.7
	30-40	26	28.3
	40-50	15	16.3
	50-60	14	15.2
	> 60	6	6.5
Gender	Male	87	94.6
	Female	5	5.4
Type of Tobacco Usage	Smoking	22	23.9
	Smokeless	58	63.0
	Mixed Use	12	13.1

Table 4 represents the pattern of tobacco usage among the participants. The pattern of tobacco usage in terms of packet consumption shows that nearly half of users (48.6%) consume 1-5 packets per day, while a substantial portion (35.7%) consumes 5-10 packets daily. A smaller group consumes >10 packets per day (15.7%). For cigarette smokers, the majority (81.6%) are light smokers while 18.3% are moderate smokers.

Table 4. Pattern of tobacco usage

Tobacco products	Categories	Frequency (N = 70)	Percentage (%)
Number of packets per day	1-5	34	48.6
	5-10	25	35.7
	> 10	11	15.7
	Quantity/day	**(N = 34)**	**(%)**
Number of cigarettes per day	Light smokers	22	64.7
	Moderate smokers	12	35.3

Figure 1 illustrates the reasons for initiating tobacco use among participants. The most common reason is "tension," reported by over half (51%) of the respondents. This is followed by "peer pressure" (14%) and "tobacco ads" (12%).

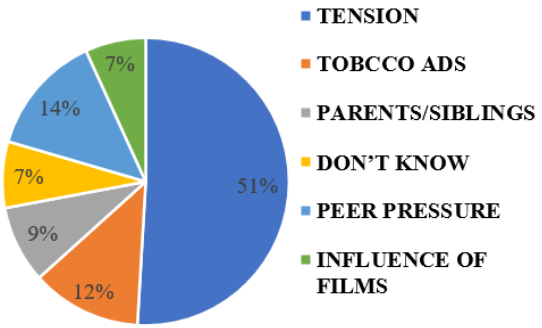

Figure 1. Reasons for initiation of tobacco

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Figure 2 shows that addiction is the main reason for continued tobacco use, cited by 48.9% of participants. Other reasons include lack of existing health issues (15.6%), unwillingness to quit, and gum problems (11.1%). Habit, craving, and other health problems each account for 4.4%. Despite these barriers, only 13.9% of users expressed a willingness to quit in the future, highlighting a significant challenge for cessation efforts.

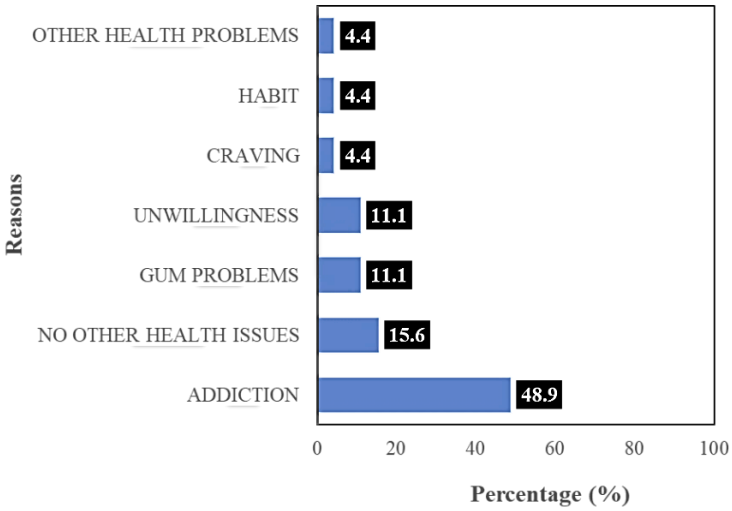

Figure 2. Reasons for not quitting tobacco

Table 5 lists the association between various sociodemographic factors and tobacco usage among study participants. The statistically significant risk factors for tobacco usage were gender (p-value < 0.001), religion (p-value = 0.02), education (p-value < 0.001), occupation (p-value < 0.001), and marital status (p-value = 0.03), while the other risk factors were insignificant.

Table 5. Association between sociodemographic factors and tobacco usage

Sociodemographic factors		Number (N=310)	Percentage (%)	Tobacco Yes (N=130)	(%)	Tobacco No (N=180)	(%)	P-value
Age (in years)	20-30	80	25.8	36	45.0	44	55.0	0.21
	30-40	92	29.7	36	39.1	56	60.9	
	40-50	63	20.3	27	42.9	36	57.1	
	50-60	39	12.6	21	53.8	18	46.2	
	≥60	36	11.6	10	27.8	26	72.2	
Gender	Male	237	76.5	120	50.6	117	49.4	<0.001*
	Female	73	23.5	10	13.7	63	86.3	
Religion	Hindu	296	95.5	120	40.5	176	59.5	0.02*
	Muslim	14	4.5	10	71.4	4	28.6	
Caste	General	78	25.2	36	46.2	42	53.8	0.53
	OBC	29	9.4	10	34.5	19	65.5	
	SC/ST	203203 203	65.4	84	41.4	119	58.6	
Education	Illiterate	63	20.3	49	77.8	14	22.2	< 0.001*
	Primary	38	12.3	22	57.9	16	42.1	
	Secondary	80	25.8	40	50.0	40	50.0	
	Higher secondary	80	25.8	24	30.0	56	70.0	
	Graduate and above	49	15.8	20	40.8	29	59.2	

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Sociodemographic factors		Number (N=310)	Percentage (%)	Tobacco Yes (N=130)	(%)	Tobacco No (N=180)	(%)	P-value
Occupation	Professional	30	9.7	9	30.0	21	70.0	< 0.001*
	Semi professional	31	10.0	15	48.9	16	51.6	
	Skilled/ Semi skilled	105	33.9	56	53.3	49	46.7	
	Unskilled	57	18.3	27	47.4	30	52.6	
	Unemployed	87	28.1	23	26.4	64	73.6	
Marital status	Married	238	76.8	90	37.8	148	62.1	0.03*
	Unmarried	58	18.7	33	51.7	25	43.1	
	Widowed/ separated	14	4.5	7	50.0	7	50.0	
Family type	Nuclear	205	66.1	88	42.9	117	57.1	0.66
	Joint family	73	23.5	31	42.5	42	57.5	
	Three generation family	32	10.4	11	34.4	21	65.7	
Socio-economic class	Upper class	20	6.5	3	15.0	17	85.0	0.12
	Upper middle class	57	18.4	22	38.6	35	61.4	
	Middle class	111	35.8	51	45.9	60	54.1	
	Lower middle class	98	31.6	43	43.9	55	56.1	
	Lower class	24	7.7	11	45.8	13	54.2	

*Significant at p-value < 0.05

Discussion

This study aimed to examine key aspects of tobacco use within the community. Among the 310 participants, the largest proportion (29.6%) were aged 30–40, aligning with the findings by Kulkarni et al., who reported a similar distribution (34.5%) (7). Regarding education, 51.6% of participants had completed secondary or higher secondary education, which was higher than the 44.95% reported by Vansh Maheshwari et al (13).

The prevalence of tobacco use in this study was 29.7%, consistent with findings from similar studies (3, 10). The age of initiation was predominantly between 21–30 (68.8%), followed by 10–20 (18.8%), reflecting patterns similar to those reported by Kulkarni RR et al. (7). These findings suggest that young adults are particularly susceptible to social influences, peer pressure, and gaps in the enforcement of age restrictions. Tobacco use was more prevalent among males (36.7%), a finding corroborated by other studies (3,7,10). This could be attributed to greater social acceptance of tobacco use among men, as well as gender-related differences in risk-taking behavior. The study also noted higher tobacco use among individuals with lower educational attainment, consistent with the findings by Rani M et al. (14), indicating limited awareness about the health risks of tobacco and reduced access to cessation resources. While Sukumar M et al. reported higher tobacco use among married individuals, the present study found a higher prevalence among unmarried and widowed individuals, suggesting that marital responsibilities may deter usage (15).

Furthermore, 63% of participants used smokeless tobacco, a significantly higher proportion compared to the 21.3% reported by Anusha Viswanathan et al., likely reflecting regional and cultural differences where smokeless forms of tobacco are more accessible and socially accepted (16).

Stress emerged as the leading reason for initiating tobacco use, aligning with the findings of Nichter M et al. (17). Advertising also played a significant role, highlighting the impact of aggressive marketing tactics targeting youth through social media and celebrity endorsements. Addiction was identified as the main barrier to quitting, consistent with studies by Shridevi et al. and Gupta R et al., which emphasized the role of long-term dependence and low self-efficacy in sustaining tobacco use (18, 19). Willingness to quit

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was noted in only 13.9% of the participants, significantly lower than the 76% reported by Kulkarni et al. and the 74.6% reported by Chockalingam et al., indicating lower motivation to quit in this population (7, 20).

Factors such as age, gender, religion, caste, marital status, education, and occupation were associated with tobacco use, in line with findings by Benojir Ahammed et al (21). Recognizing these associations is vital for public health policy, as it enables the National Tobacco Control Programme (NTCP) and supports India's commitments under the WHO Framework Convention on Tobacco Control (WHO-FCTC) to implement targeted, culturally sensitive interventions and behavior change communication strategies aimed at high-risk groups.

Strengths and limitations of the study

The study captures comprehensive patterns of tobacco use, including both smoking and smokeless forms, in a specific urban population. Its inclusion of key sociodemographic factors and use of a validated tool strengthens the relevance and reliability of the findings. The study's cross-sectional design limits causal inference and the ability to track changes over time. Self-reported data may be influenced by recall or social desirability bias. Generalizability is limited.

Conclusion

The study provides comprehensive insights into the prevalence, patterns, and awareness of tobacco use among adults in Manikeshwari, Kalaburagi. A substantial proportion of participants reported current or past tobacco use, with smokeless tobacco being the most commonly used form. Initiation was most frequent during early adulthood, highlighting a critical window for preventive efforts. Health concerns and family influence were major motivators for quitting, while addiction emerged as the primary barrier. These findings emphasize the need for targeted public health interventions under programs like NTCP, focusing on early education, broader health risk communication, and addiction-centered cessation support, particularly for smokeless tobacco users.

Recommendations and future scope

In light of the study's findings, there is a pressing need for targeted public health strategies to curb tobacco use in Manikeshwari, Kalaburagi. Educational campaigns should focus on raising awareness about the dangers of both smoking and smokeless tobacco, particularly among adolescents and individuals with limited literacy. Preventive measures such as school-based interventions, strict enforcement of age-related sales restrictions, and penalties in designated tobacco-free areas are essential to discourage early initiation. Enhancing cessation efforts through accessible support systems, community participation, and encouragement from family members is equally important. Future studies should consider longitudinal research to monitor evolving usage trends and evaluate the effectiveness of existing interventions. Exploring underlying psychosocial and socioeconomic influences, such as stress, peer dynamics, education, and income, can aid in developing more tailored prevention programs. Additionally, research focusing on youth, gender-based differences, local policy impact, and program evaluations will offer valuable insights. Cross-regional comparisons may also uncover localized drivers of tobacco use, enabling the development of more effective, region-specific control measures.

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Conflicts of interest

The authors declared no conflicts of interest.

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Data availability

All data generated or analyzed during this study are included in this published article.

Ethical considerations

Institutional Ethics Committee of Gulbarga Institute of Medical Sciences, Kalaburagi approved the study.

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Code of ethical

The manuscript was prepared according to STROBE guidelines.

Authors contribution

S. S and K. J. D did data collection, review of literature, methodology, data analysis and interpretation, writing-original draft and editing; M. M.D and A. G were involved in conceptualization, supervision, writing-review.

Open access policy

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Abbreviations

SEAR Southeast Asian Region
OBC Other Backward Class
WHO World Health Organization
SC/ST Scheduled Castes/Scheduled Tribes
GATS Global Adult Tobacco Survey
GIMS Gulbarga Institute of Medical Sciences
COTPA Act Cigarettes and Other Tobacco Products Act

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