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Original Research Article

A cross-sectional study on tobacco addiction in a rural community of district Sheopur, Madhya Pradesh

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ABSTRACT

Background: Tobacco addiction is a major public health concern and is influenced by multiple socio-demographic factors. Cultural acceptance, widespread availability of inexpensive products, persistent misconceptions regarding perceived benefits, and highly addictive nature continue to hinder cessation efforts. Understanding its prevalence and determinants is essential for targeted prevention and control strategies.
Methods: A community-based cross-sectional study was conducted among 1,085 participants for a period of September 2025 to January 2026 in Nagdi village of Sheopur, Madhya Pradesh, India. Data was collected by means of house-to-house survey using simple random sampling technique via pre-designed, pre-tested and semi-structured questionnaire. Data was entered in MS-Excel, descriptive and inferential statistical analysis was done using IBM-SPSS software v28.0.
Results: The overall prevalence of tobacco addiction was observed to be 39.2%. Addiction was significantly higher among males, 49.11% in comparison to females, 28.41% with p=0.001. The prevalence increased with age, with peak at 61-70 years, 56.67% with p=0.001. An inverse association was observed with education, with highest prevalence among illiterate participants, 46.41% and lowest among graduates, 14.29% with p=0.001. Head of families showed a markedly higher prevalence, 63.70% compared to other family members, 31.04% with p=0.001.
Conclusions: Tobacco addiction was common in the study population and showed significant associations with gender, age, educational status, and family role. These findings highlight the need for targeted health education and tobacco control interventions, particularly among males, older adults, less-educated individuals and head of households.

Keywords: Cultural acceptance, Misconceptions, Socio-demographic factors, Tobacco addiction, Tobacco use

INTRODUCTION

Tobacco use in India is one of the leading causes of preventable morbidity and mortality, but still, it remains a major public health challenge. India is the second-largest consumer and third-largest producer of tobacco worldwide, with tobacco-related diseases accounting for more than 1.3 million deaths annually. As per national estimates, around 28.6% of Indian adults currently use tobacco in some form, imposing a substantial health and economic burden on the country.[1]

Tobacco consumption in India is primarily in two forms, smoked and smokeless form. Smoked products are namely beedis, cigarettes, cheroots and pipes. Beedis are the most commonly used smoked product. Smokeless tobacco includes chewable preparations such as khaini, gutkha, paan with tobacco, snuff and mishri. In certain

areas, smokeless tobacco use is more prevalent than smoking, especially among women and younger age-group. The reason behind this is largely due to sociocultural acceptability and ease of access.[2]

The early initiation of tobacco use is a major grave situation. Majority users begin during adolescence, often before the age of 25 years, with few initiating at 9-10 years of age.[3] Early initiation is strongly associated with long-term nicotine dependence, increased risk of chronic diseases, reduced cessation success, and higher lifetime exposure to tobacco toxins.

The prevalence and pattern of tobacco use are strongly influenced by socio-demographic factors. Gender differences are prominent, with men having substantially higher consumption rates than that of women. Educational attainment also plays a crucial role. Lower literacy levels are consistently associated with higher tobacco use, while higher education often acts as a protective factor due to improved awareness regarding health risks. Residence further influences usage patterns. A higher prevalence was observed among rural areas and urban slums due to social acceptance, lower awareness, and weaker enforcement of tobacco control measures.[4] Additionally, tobacco use shows an inverse relationship with socioeconomic status, disproportionately affecting economically disadvantaged population, perpetuating cycle of poverty and ill health.[5]

Beyond tobacco, substance use disorders constitute a broader public health concern in India. Alcohol is the most commonly used psychoactive substance after tobacco and is associated with multiple comorbidities, including cardiovascular diseases, metabolic disorders, and psychiatric conditions such as anxiety and depression. The use of illicit drugs, including cannabis and opioids (e.g., brown sugar), further compounds the burden of addiction and its associated social consequences.[6]

Despite the implementation of national regulatory measures such as cigarettes and other tobacco products act (COTPA), effective control remains challenging. Cultural acceptance of tobacco use, widespread availability of inexpensive products, persistent misconceptions regarding perceived benefits, and the highly addictive nature of nicotine continue to hinder cessation efforts. Therefore, understanding the socio-demographic determinants of tobacco addiction is essential for developing targeted, culturally appropriate prevention and control strategies.

Objectives

To estimate the prevalence of tobacco use among participants of different age group. To assess the socio-demographic factors of the participants regarding tobacco use. To find out the association of socio-demographic factors of the participants with tobacco use.

METHODS

Study design

It was a community-based cross-sectional study.

Study area

The study took place at village Nagdi, District Sheopur, Madhya Pradesh.

Study population

All residents aged 14 years and above residing in village Nagdi during the study period were included.

Study period and duration

The study took place for a period of 4 months from September 2025 to January 2026.

Inclusion criteria

Permanent residents with age ≥14 years of Nagdi village. Those who gave willingness to participate in the study.

Exclusion criteria

Those who were not permanent residents of Nagdi village. Residents of age-group <14 years. Participants those who were unavailable during the time of data collection. Those who did not gave their willingness for participation in the study.

Sample size and sampling method

All eligible participants available during house-to-house survey selected by means of simple random sampling technique during the study period were the desired sample size in the study which was found out to be 1085.

Study tool

A pre-designed, pre-tested semi-structured questionnaire was utilized to maintain consistency in data collection procedure, similar to approaches used in other regional epidemiological assessments.[7]

Data collection method

After taking permissions from the dean, medical superintendent, head of the department of community medicine, chief medical health officer, Sheopur (CMHO), local bodies of the village (Sarpanch) and getting clearance from the author's institutional ethical committee (IEC), the data collection procedure was commenced. The data collection was conducted by means of a pre-designed, pre-tested semi-structured questionnaire via face-to-face interview technique among

the participants from house-to-house survey. Prior to the data collection procedure informed consent were obtained from each participant.

During data collection procedure, help from local leaders of the village, Accredited Social Health Activists (ASHA) worker, Anganwadi (AWW) worker were also taken, for ease in finding the houses and survey. They also encouraged, motivated and have built trust among participants for providing honest information which fostered more numbers to participate in the study.

A pilot study was conducted among 300 participants before the main data collection procedure for validation of the questionnaire and to make necessary changes if required.

Study variables

Independent variables were age, gender, family role (family head/member).

Dependent variable was tobacco use (yes/no, type of tobacco).

Statistical analysis

Data entered in MS Excel 2021a, checked, cleaned and coded. Analysis was done using software IBM-SPSS v28.0 (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, v27.0. Armonk, NY: IBM Corp), where descriptive statistics such as frequency, percentage, mean, and standard deviation were calculated for summarizing the data. Chi-square test was conducted to find out the association between tobacco use and age group, gender, and family role (family head/member). P value of <0.05 was considered as statistically significant.

Ethical consideration and consent

Ethical approval was obtained from the author's institution from the institutional ethical committee (IEC). Informed consent was obtained from all the participants prior to data collection procedure, where the purpose of the study was mentioned along with the information for the participants regarding dropping out from the study at any stage without any prejudices. It was in local vernacular language (Hindi) for convenience. Confidentiality and anonymity of the participants were maintained and data was used only for research purpose.

For ensuring validity of the findings, potential biases were rigorously addressed. Selection bias was minimized through simple random sampling during house-to-house survey of eligible residents. Information and recall biases were mitigated using a pre-designed, pre-tested, semi-structured questionnaire administered via face-to-face interviews. Finally, social desirability bias was addressed by conducting interviews in the local vernacular language, ensuring participant confidentiality, and fostering a trust-based environment for providing honest information.

RESULTS

Out of total 1085 participants, 52.0% were male and 48.0% were female. The largest proportion belonged to the 21-30 years age group (33.4%), followed by 31-40 years (20.3%) and 14-20 years (16.1%). Participants aged 41-50 years constituted 12.7%, while those aged 51-60 years accounted for 10.0%. Smaller proportions were observed in the 61-70 years (5.5%), 71-80 years (1.7%), and 81-90 years (0.3%) age groups. Regarding educational status, nearly half of the participants were illiterate (44.9%). Middle school education was reported by 18.5%, high school by 12.8%, primary education by 9.0%, graduation by 8.4%, and higher secondary education by 6.4%. In context to relationship of the head of the family, majority were family members (75.1%), while 24.9% were heads of their families.

Table 1: Prevalence of tobacco addiction among study participants (n=1085).

Addiction	Frequency	Percentage
Yes	425	39.2
No	660	60.8

In the present study it was observed that 39.2% reported tobacco addiction, while 60.8% reported of no tobacco addiction, indicating that the majority of participants were not addicted to tobacco (Table 1).

Tobacco addiction was significantly associated with gender (p=0.001). Nearly half of the males (49.11%) were addicted to tobacco compared to females 28.41%, indicating a substantially higher prevalence among men. A statistically significant association was also observed between age group and tobacco addiction (p=0.001). The prevalence of addiction increased with advancing age, from 21.14% in the 14-20 years group to over 50% in the 41-70 years groups, with the highest proportion in the 61-70 years age group (56.67%). Educational status demonstrated a significant relationship with tobacco addiction (p=0.001). Addiction was more common among illiterate participants (46.41%) and those with lower levels of education, while it was least prevalent among graduates (14.29%), suggesting an inverse relationship between education level and tobacco use. Relationship to the head of the family was also significantly associated with tobacco addiction (p=0.001). Heads of families had a markedly higher prevalence (63.70%) compared to other family members (31.04%) (Table 2).

Table 2: Association between socio-demographic variables and tobacco addiction (n=1085).

Variables		Tobacco addiction			P value
		Yes N (%)	No N (%)	Total	
Gender	Male	277 (49.11)	287 (50.89)	564	0.001*
	Female	148 (28.41)	373 (71.59)	521	
Age group (in years)	14-20	37 (21.14)	138 (78.86)	175	0.001*
	21-30	129 (35.64)	233 (64.36)	362	
	31-40	89 (40.45)	131 (59.55)	220	
	41-50	70 (50.72)	68 (49.28)	138	
	51-60	56 (51.38)	53 (48.62)	109	
	61-70	34 (56.67)	26 (43.33)	60	
	71-80	9 (50.0)	9 (50.00)	18	
	81-90	1 (33.33)	2 (66.67)	3	
Education	Illiterate	226 (46.41)	261 (53.59)	487	0.001*
	Primary	41 (41.84)	57 (58.16)	98	
	Middile	77 (38.31)	124 (61.69)	201	
	High School	42 (30.22)	97 (69.78)	139	
	Graduation	13 (14.29)	78 (85.71)	91	
Relation with head of the family	Head of family	172 (63.70)	98 (36.30)	270	0.001*
	Family members	253 (31.04)	562 (68.96)	815	

*Statistically significant.

DISCUSSION

In the present study that was conducted among 1,085 participants focused on the prevalence of tobacco addiction along with its association with socio-demographic characteristics. The findings were discussed in the light of existing literature to understand their broader public health implications.

Overall prevalence of tobacco addiction

The study found a tobacco addiction prevalence of 39.2% among participants. This figure is higher than the national estimate reported by the global adult tobacco survey (GATS-2) in a study by Mehta et al, which documented 28.6% adult tobacco usage in India (Table 1).[1] However, the observed prevalence is comparable to several regional studies conducted in rural and semi-urban settings such as by Agarwal et al in Bareilly (50.5%) and by Rajaram et al in Karnataka (54.8%) respectively.[4,8] These comparisons suggested that local sociocultural environments, accessibility of tobacco products and lower awareness levels may contribute to higher addiction rates than national averages.

Gender disparities and social norms

A statistically significant association was observed between gender and tobacco addiction (p=0.001), with males (49.11%) exhibiting nearly twice the prevalence seen among females (28.41%) (Table 2). The present study revealed that male predominance in tobacco use is consistent with studies conducted by Sangita et al, in Kalaburagi and Rao et al in Vijayawada, where tobacco consumption among men far exceeded than that of women.[7,9] This pattern is often attributed to social acceptance of smoking among men, occupational exposure, peer influence, and risk-taking behavior.

Although female prevalence was lower, the addiction rate among women in this study was observed to be substantial. Evidence from other studies indicated that Indian women are more likely to use smokeless forms of tobacco, such as mishri and chewing tobacco because smoking is often socially discouraged for females. In some rural areas, women's use of smokeless tobacco even exceeded more in comparison to that of men, highlighting a hidden but significant public health issue.[2]

Age-related trends and the addiction cycle

Tobacco addiction showed a significant increase with advancing age (p=0.001), peaking in the 61-70 years age group (56.67%). This pattern suggested a cumulative exposure and a long-term nicotine dependence (Table 2). Similar trends have been reported in studies conducted by Sangita et al and Rajaram et al, where prevalence among individuals aged 60 years and above exceeded 50%.[4,9] Older adults typically have longer history of tobacco use and experience a greater difficulty in quitting due to established dependence and lower cessation motivation.

Though the prevalence among younger participants (14-20 years) were comparatively lower (21.14%), but represents a critical period for initiation, similar to the findings by Dave et al.[3] Initiation of tobacco consumption during adolescence or early adulthood is strongly associated with lifelong dependence and increased risk of

chronic diseases, emphasizing the importance of early preventive interventions.

Education as a protective factor

Educational status demonstrated a strong inverse association with tobacco addiction (p=0.001). Illiterate participants had the highest prevalence (46.41%), whereas graduates showed the lowest (14.29%) (Table 2). Education likely acts as a protective factor by improving awareness of health risks, fostering healthier behaviors, and enhancing access to cessation information and services. Similar findings have been reported in studies by Rajaram et al and Agarwal et al, where tobacco use was markedly higher among individuals with little or no formal education.[4,8]

This pattern reflected the "povertytobacco cycle," in which disadvantaged population face both higher addiction risk with greater financial burden from tobacco expenditure and related health problems.

Household hierarchy and influence

A notable finding was that, significantly higher prevalence of tobacco addiction among heads of families (63.70%) were observed in compared with the other family members (31.04%) (p=0.001). This suggested that household authority figures play a critical role in shaping health behaviors within families.

Tobacco use by parents or senior family members strongly influences initiation among younger members through behavioral modeling and normalization of the habit. In many settings, easy household access to tobacco further facilitates, early experimentation and sustained use contribute to the inter-generational transmission of addiction.

The study was restricted to a single village of Nagdi, therefore the results are highly relevant to rural Madhya Pradesh, they might not reflect patterns in urban or culturally distinct regions. Additionally, the study relied on self-reported usage. Despite measures to ensure confidentiality and rapport, social stigma, particularly among women and youth might have led to an underestimation of the true prevalence. Future longitudinal research incorporating biochemical markers would provide a more definitive assessment of addiction trends.

The primary strength of the study is its robust sample size of 1,085 participants and the use of simple random sampling, which ensured high statistical power and representative prevalence estimates within the rural community. However, the findings were limited to a single village, which might affect generalizability and reliance on self-reported data might lead to social desirability bias.

CONCLUSION

Tobacco addiction is not randomly distributed within the population but is strongly associated with male gender, increasing age, lower educational attainment, and household leadership status. There is a dire need for targeted, culturally sensitive interventions under national tobacco control initiatives. Preventive strategies should emphasize school-based education to reduce early initiation and community-based cessation programs to be tailored among less educated population and household decision-makers to interrupt the cycle of tobacco dependence across generations.

Recommendations

To address the high prevalence of tobacco addiction, targeted community-based interventions must prioritize school-level education for prevention of early initiation and tailored cessation programs for household heads and less-educated groups are essential for breaking the inter-generational habits. Strengthening of local COTPA enforcement and provision of culturally sensitive, vernacular counseling are vital for reduction of rural tobacco burden.

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REFERENCES

1. Mehta V, Pardeshi A, Rahman R, Noor T, Mathur A. Early initiation of tobacco use and its socio-demographic correlates in India: evidence from the Global Adult Tobacco Survey (GATS-2). Tobacco Use Insights. 2026;19:1179173X251372804.
2. Chockalingam K, Vedhachalam C, Rangasamy S, Sekar G, Adinarayanan S, Swaminathan S, et al. Prevalence of tobacco use in urban, semi urban and rural areas in and around Chennai City, India. PLoS One. 2013;8(10):e76005.
3. Jhaveri KR, Jhala HP. Prevalence and pattern of tobacco usage among children aged 9 to 13 years in schools of Naswadi Village, Gujarat, India. J Oral Health Community Dentist. 2018;12(3):73-8.

4. Rajaram D, Nooyi SC, Sreekantaiah P, Pradeep S, George A. Prevalence and determinants of smoking and smokeless tobacco in the rural population of Karnataka, India. J Epidemiol Public Health. 2023;8(1):15-24.
5. Caliskan S. The factors that affect smoking probability and smoking expenditures in Turkey. Ser J Manag. 2009;4(2):183-202.
6. Ghosh S. Substance use disorders and related morbidities in Ghaziabad District, Uttar Pradesh: an anthropological study of rehabilitation centres. Gangtok: Sikkim University. 2023.
7. Rao MV, Donapudi A, Goud KS. Investigating tobacco consumption and its influences in urban areas: a cross-sectional approach. Int J Trop Med. 2024;19(4):24-30.
8. Agarwal A, Sarswat G, Khan S, Joshi HS. Prevalence of tobacco use and various socio-demographic factors associated with tobacco use among males of rural area of Bareilly. Int J Acad Med Pharm. 2023;5(5):363-8.
9. Sangita S, Dabade KJ, Dhadave MM, Ajaykumar G. A Study on prevalence and pattern of tobacco usage among adults in Manikeshwari, Kalaburagi, Karnataka, India: a cross-sectional study. J Community Health Res. 2025;14(1):182-91.

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