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Original Article

Public Health Section

Prevalence, Correlates and Trends in Tobacco use among Youths: A Retrospective Secondary Data Analysis of Nationally Representative Surveys (NFHS-5) in India

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ABSTRACT

Introduction: Youths are the most vulnerable population to initiate tobacco use. It is the need of the hour to prevent tobacco addiction among young people to reduce the morbidity and mortality associated with it. Therefore, there is a need for necessary data to build an appropriate strategy to combat this epidemic.

Aim: To determine the prevalence and trends of tobacco use and to assess the factors associated with tobacco use among youths (age 15-24 years) in India.

Materials and Methods: This retrospective secondary data analysis study was conducted at Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India, between January 2023 and June 2023, using data from the National Family Health Survey-5 (NFHS-5), 2019-2021, which was conducted across all states of India to estimate the prevalence of tobacco use among the 15-24 age group. Data were compared with NFHS 3 and 4 to observe the trends in tobacco use. The data were analysed using Statistical Packages for Social Sciences (SPSS) software (version 21.0). Multivariate logistic regression was used to identify the significant risk factors associated with tobacco use. A p-value less than 0.05 was considered statistically significant.

Results: The prevalence of smoking and smokeless tobacco use was 2109/14525 (14.52%) and 2237/14525 (15.40%) respectively among male youths aged 20-24 years, and it was 374/119043 (31%) and 119/119043 (1.53%) in females of similar age. For males, the prevalence has decreased from 40.07% in NFHS-3 to 27.31% in NFHS-4 and to 22.51% in NFHS-5. For females, the prevalence has decreased from 4.55% in NFHS-3 to 2.38% in NFHS-4 and to 1.33% in NFHS-5. Males and females belonging to the scheduled caste/scheduled tribe, having a poor wealth index, and in the married category had a higher prevalence of tobacco use. Youths residing in rural areas were using more smokeless tobacco.

Conclusion: There was a declining trend of tobacco use among youths over NFHS-3 (2005-2006), NFHS-4 (2015-2016), and NFHS-5 (2019-2021). Male gender, higher age, rural area, the northeast region of India, poor wealth index, education upto primary level, being married, and other categories of marriage had higher adjusted odds of using both forms of tobacco. There is a need to implement and enforce evidence-based tobacco control strategies that can substantially improve the health of the young, hence securing India's future.

Keywords: Adolescent, Health survey, National family health survey, Risk factors, Smokeless tobacco, Smoking, Tobacco control, Young adult

INTRODUCTION

Tobacco use is a serious public health concern affecting youths [1]. Nearly six million deaths occur every year due to tobacco use, which may escalate to eight million deaths a year by 2030, according to the World Health Organisation (WHO) [2]. The majority of tobacco users start using tobacco during youth, i.e., the 15 to 24 year-old age group. Globally in 2018, at least one in 10 adolescents aged 13-15 years used tobacco, although there are areas where this figure is much higher [3]. If current trends continue, 250 million children and young people over time will die from tobacco-related diseases, with most of them in developing countries [4]. Tobacco companies are now aggressively targeting their advertising strategies in India. Adolescents often get attracted to tobacco products because of such propaganda [5].

The most prevalent form of tobacco use in India is smokeless tobacco, which includes khaini, gutkha, betel quid with tobacco, and zarda, whereas smoking forms of tobacco used are bidi, cigarette, and hookah [6]. Another form of tobacco popular among youths is E-cigarette {also known as vapes or Electronic Nicotine Delivery Systems (ENDS)}, a battery-powered device that converts a liquid (e-liquid) into an aerosol. In addition to nicotine, e-cigarette aerosol may contain heavy metals, volatile organic compounds, and fine and ultrafine particles that can be inhaled deeply into the lungs by both users and bystanders [6]. e-cigarettes are particularly risky when used by children and adolescents [3]. Nicotine use among youth increases the risk of lifelong tobacco addiction and may also increase the risk for future addiction to other drugs [7].

Various factors are indicated as correlates of tobacco use susceptibility among youth, including individual characteristics (e.g., age, gender), social environment, and social contexts (e.g., family, friends, school) [8]. The most common risk factors were found to be peer pressure, parents' smoking behaviour, family conflict, psychological distress, and curiosity [9].

Due to the enormous psychosocial and health effects of tobacco on youth, it is pertinent to understand its burden along with sociodemographic factors for formulating effective tobacco control measures targeting them [10].

There are some other surveys like the Global Youth Tobacco Survey (GYTS) and Project Mobilising Youth for Tobacco-related Initiatives (MYTRI) in India to evaluate the prevalence of tobacco use, tobacco control, and prevention programs [11-13].

Understanding trends in youth initiation and use of tobacco products, including cigarettes, e-cigarettes, cigars, and smokeless tobacco, helps policymakers determine how to allocate prevention resources.

Effective strategies to reduce youth initiation of tobacco use include federal regulation of tobacco products; significant increases in tobacco prices, including excise taxes; smoke-free air laws; restrictions on tobacco advertising and promotion; restricting the availability of tobacco products to youth; mass-media public education campaigns; and full implementation of comprehensive state and community tobacco control programs [7]. Nationally representative and reliable prevalence data on tobacco consumption are scarce [14]. Similarly, the sociodemographic predictors of tobacco smoking and chewing are poorly understood. The existing studies on the prevalence of tobacco use are based on non-representative sample surveys or have been conducted in localised, mostly urban geographical areas [15-17].

Therefore, the aim of this study was to determine the prevalence and trend of tobacco use among youths (15-24 years) in India and to assess the factors associated with tobacco use among youths.

MATERIALS AND METHODS

This retrospective secondary data analysis was conducted in the Department of Community Medicine at Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India between January 2023 to June 2023. The study was approved by the Institutional Ethics Committee, Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh (PGI/IEC/2022/001090).

Inclusion criteria: The youths aged 15 to 24 years, youths with data availability for outcome variables and predictor variables were included in the study.

Exclusion criteria: The youths with missing data in outcome variables or predictor variables were excluded from the study.

Sample size: The sample size of the study was 272,250.

Study Procedure

The data from the National Family Health Survey (NFHS-5), conducted from 2019 to 2021, covering each district of 29 states and eight union territories of India was used. NFHS-5 is a large-scale cross-sectional survey conducted in two phases - Phase-I from 17 June 2019 to 30 January 2020 covering 17 states and 5 UTs and Phase-II from 2 January 2020 to 30 April 2021 covering 11 states and three UTs. NFHS-5 has been conducted under the stewardship of the Ministry of Health and Family Welfare (MoHFW), Government of India. MoHFW designated the International Institute for Population Sciences (IIPS), Mumbai, as the nodal agency for conducting the NFHS. It provides information on population, health, and nutrition for India [18].

The NFHS-5 gathered data from 636,699 households, recruiting 724,115 women (15-49 years) and 101,839 men (15-54 years). NFHS-5 used a two-stage cluster sampling approach wherein, in the first stage, Primary Sampling Units (PSUs) i.e., villages in rural areas and Census Enumeration Blocks (CEBs) in urban areas were selected using the Probability Proportional to Size (PPS) technique.

A list of households was created through mapping and household listing in each selected PSU. In the second stage, a fixed number of 22 households per cluster (i.e., PSUs) were selected using a systematic random sampling technique [14].

The primary outcome included in present study and recorded in the survey was tobacco use among youths, which was captured by asking questions such as “Does he/she use tobacco?” The primary outcome was further classified into two types:

- **Smoking tobacco:** If the respondent reported smoking cigarettes, bidis (hand-rolled cigarettes), cigar, pipe, or hookah.
- **Smokeless tobacco:** If the respondent reported using gutkha/paan masala with tobacco, khaini, paan with tobacco, snuff, and other chewing tobacco.

The independent variables included age (15-24 years), place of residence (urban and rural), region (North, South, Central, West, East, and Northeast), education (No education, primary, secondary, and higher education), religion (Hindu, Muslim, and others), social category {Schedule Caste (SC)/Schedule Tribe (ST). Other Backward Class (OBC) and others}, wealth index (poor, middle, and rich), and marital status (never married, married, others - divorced/widowed/separated) were extracted from the NFHS-5 dataset.

For trend analysis, the prevalence of tobacco use among youths was also calculated using NFHS-3 and 4 datasets [19,20]. Data on tobacco use among youths were extracted from both datasets, and the prevalence was calculated. It was then compared with each other and with that of NFHS-5 prevalence to show the trend.

STATISTICAL ANALYSIS

Data were analysed using SPSS software (version 21.0). Descriptive statistics were used to characterise the study population and tobacco use status. The application of Kolmogorov-Smirnov test and Shapiro-Wilks test confirmed the normal distribution of the data. Logistic regression analysis was used to determine the correlates of tobacco usage among youths. Firstly, univariate analysis was conducted taking into account all the determinants and crude odds ratio was calculated. Then, multivariate regression analysis was run adjusting all the confounders, and adjusted odds ratio was calculated with a 95% confidence interval. Hosmer and Lemeshow test; and Cox and Snell R square test tested the goodness of fit of the models. A p-value less than 0.05 was considered to be statistically significant.

RESULTS

The NFHS-5 covers a total population of 8,17,382 all over India, including 2,72,250 (33.31%) youths in the 15-24 years age group. Female youths 241,180, (88.59%) outnumbered male youths 31,070, (11.41%). The majority of male and female youths belonged to rural areas (74.95%, 77.38% respectively). Nearly one-fourth, i.e., 25.31% of male youths and 26.7% of female youths were from the central region. 71.89% of males and 69.71% of females had completed their secondary education. Most of the youths followed Hinduism (75%), and nearly 40% belonged to other backward classes. 43.93% of males and 45.72% of females had a poor wealth index. 89.11% of males and 65.6% of females were never married during the time of the survey [Table/Fig-1].

	Male		Female	
Variables	Number (n)	Percentage (%)	Number (n)	Percentage (%)
Age (years)				
15-19	16,657	53.61	122,480	50.78
20-24	14,413	46.39	118,700	49.22
Place of residence				
Urban	7,784	25.05	54,561	22.62
Rural	23,286	74.95	186,619	77.38
Region				
North	6,822	21.96	48,694	20.19
Central	7,863	25.31	64,401	26.7
East	4,852	15.62	42,998	17.83
North-east	4,000	12.87	31,970	13.26
West	3,447	11.09	22,023	9.13
South	4,086	13.15	31,094	12.89
Education				
No education	1,436	4.62	16,010	6.64
Primary	1,733	5.58	15,082	6.25
Secondary	22,335	71.89	1,68,132	69.71
Higher	5,566	17.91	41,956	17.4

Religion				
Hindu	23,584	75.91	1,81,475	75.24
Muslim	3,983	12.82	33,773	14
Others	3,503	11.27	25,932	10.75
Social category				
SC/ST	11,796	37.97	93,528	38.78
OBC	12,413	39.95	93,969	38.96
Others	6,861	22.08	53,683	22.26
Wealth index				
Poor	13,648	43.93	1,10,273	45.72
Middle	6,641	21.37	51,275	21.26
Rich	10,781	34.7	79,632	33.02
Marital status				
Never married	27,686	89.11	1,58,224	65.6
Married	3324	10.70	81,557	33.82
Others	60	0.19	1,399	0.58
Total	31070	11.41	241180	88.59

[Table/Fig-1]: Frequency and percentage distribution of male and female youths by sociodemographic characteristics.

The prevalence of smoking and smokeless tobacco use was 2109/14525 (14.52%) and 2237/14525 (15.40%), respectively, among male youths of 20-24 years, and it was 374/119043 (0.31%) and 119/119043 (1.53%) in females of a similar age. Both forms of tobacco use showed a higher prevalence in rural areas. Males having primary education had a higher prevalence of smoking, i.e., 345/1898 (18.16%), and smokeless tobacco use, 464/1898 (24.46%), whereas females having no education showed a higher prevalence of smoking, 94/15712 (0.60%), and smokeless tobacco use, 822/15712 (5.23%). Muslim males showed a higher prevalence of both forms of tobacco use, whereas it was higher in the "others" category of females. Males and females belonging to scheduled caste/scheduled tribe, having a poor wealth index, and in the married category had a higher prevalence of tobacco use [Table/Fig-2].

Among the youths, males in the age group of 20-24 years were 2.47 times more likely to use smoking and 2.38 times more likely to use smokeless tobacco when compared with the age group of 15-19 years (p<0.01). Male youths residing in rural areas were 1.03 times more likely to smoke and 1.56 times more likely to use smokeless tobacco compared to urban youths. Region-wise comparison of smoking showed males of the northeast region use 2.98 times more as compared to the north region (p<0.01). The odds of using smoking and smokeless tobacco decreased with the educational status of males. The odds of smoking were less than one in males having a middle and rich wealth index. In comparison with never-married males, the "others" category consisting of widowed/divorced/separated males were 2.96 times more likely to smoke (p<0.01) [Table/Fig-3,4].

Similarly, female youths in the age group of 20-24 years were 1.92 times more likely to use smoking and 2.27 times more likely to use smokeless tobacco when compared with the age group of 15-19 years (p<0.01). Female youths of rural areas were 1.29 times more likely to smoke and 1.39 times more likely to use smokeless tobacco compared to urban youths (p<0.01). Region-wise comparison of smoking showed that females in the northeast region use 4.33 times more compared to the north region (p<0.01), followed by the central region ({(Odds Ration (OR)}1.51). The odds of smoking and using smokeless tobacco decreased with the educational status of females. The odds of smoking were less than one in females with a middle and rich wealth index. In comparison with never-married females, the married and "others" category consisting of widowed/divorced/separated females were more likely to smoke and use smokeless tobacco [Table/Fig-3,4].

	Male		Female	
	Smoking, n/N (%)	Chewing, n/N (%)	Smoking, n/N (%)	Chewing, n/N (%)
Age (years)				
15-19	1057/16545 (6.39)	1148/16545 (6.94)	206/122137 (0.17)	841/122137 (0.69)
20-24	2109/14525 (14.52)	2237/14525 (15.40)	374/119043 (0.31)	119/119043 (1.53)
Place of residence				
Urban	1046/10641 (9.83)	831/10641 (7.81)	165/70862 (0.23)	488/70862 (0.69)
Rural	2120/20428 (10.38)	2554/20429 (12.50)	415/170318 (0.24)	2170/170318 (1.27)
Region				
North	258/2839 (9.09)	220/2839 (7.75)	75/34413 (0.22)	376/34413 (1.09)
Central	304/3959 (7.68)	696/3959 (17.58)	159/68401 (0.23)	771/68401 (1.13)
East	1407/8411 (16.73)	1012/8411 (12.03)	148/59070 (0.25)	460/59070 (0.78)
North-east	269/1539 (17.46)	232/1539 (15.08)	75/8516 (0.89)	507/8516 (5.95)
West	445/7546 (5.9)	1037/7546 (13.74)	83/30456 (0.27)	497/30456 (1.63)
South	482/6775 (7.12)	188/6775 (2.77)	40/40324 (0.10)	47/40324 (0.12)
Education				
No education	220/1399 (15.71)	341/1399 (24.38)	94/15712 (0.60)	822/15712 (5.23)
Primary	345/1898 (18.16)	464/1898 (24.46)	77/15027 (0.52)	449/15027 (2.99)
Secondary	1996/21558 (9.26)	2301/21558 (10.67)	324/164575 (0.20)	1321/164575 (0.80)
Higher	605/6214 (9.74)	278/6215 (4.47)	85/45866 (0.19)	66/45866 (0.14)
Religion				
Hindu	2374/24144 (9.83)	2688/24144 (11.13)	480/193694 (0.25)	2036/193694 (1.05)
Muslim	622/5417 (11.49)	604/5417 (11.14)	64/36579 (0.17)	430/36579 (1.17)
Others	170/1509 (11.25)	93/1509 (6.15)	37/10727 (0.34)	192/10727 (1.79)
Social category				
SC/ST	1039/9057 (11.47)	1288/9057 (14.22)	280/78497 (0.36)	1465/78497 (1.87)
OBC	1093/13387 (8.17)	1407/13387 (10.51)	149/104678 (0.14)	744/104678 (0.71)
Others	1033/8626 (11.98)	690/8626 (8.00)	151/58005 (0.26)	448/58005 (0.77)

Wealth index				
Poor	1599/12317 (12.97)	2034/12327 (16.5)	325/101142 (0.32)	2021/101142 (2.00)
Middle	588/6645 (8.85)	754/6645 (11.35)	89/50662 (0.18)	355/50662 (0.70)
Rich	979/12098 (8.09)	596/12098 (4.93)	166/89376 (0.19)	281/89376 (0.31)
Marital status				
Never married	2571/27747 (9.27)	2575/27747 (9.28)	311/153229 (0.20)	874/153229 (0.57)
Married	575/3258 (17.66)	799/3258 (24.53)	268/86702 (0.31)	1721/86702 (1.99)
Others	20/65 (30.31)	10/65 (16.11)	1/1248 (0.10)	62/1248 (4.99)

[Table/Fig-2]: Prevalence of tobacco use among youths by sociodemographic characteristics.

	Male		Female	
Variables	**Unadjusted OR**	**Adjusted OR**	**Unadjusted OR**	**Adjusted OR**
Age (years)				
15-19®	1.00	1.00	1.00	1.00
20-24	2.47*** (2.29,2.67)	2.68*** (2.46,2.92)	1.92*** (1.67,2.2)	1.87*** (1.58,2.21)
Place of residence				
Urban®	1.00	1.00	1.00	1.00
Rural	1.03 (0.95,1.12)	0.8*** (0.73,0.88)	1.29*** (1.09,1.53)	0.79** (0.65,0.96)
Region				
North®	1.00	1.00	1.00	1.00
Central	0.9 (0.8,1.01)	0.91 (0.8,1.03)	1.51*** (1.21,1.88)	1.33** (1.06,1.67)
East	1.59*** (1.41,1.79)	1.52*** (1.34,1.73)	0.92 (0.7,1.2)	0.69*** (0.52,0.91)
North-east	2.98*** (2.66,3.34)	2.28*** (2,2.6)	4.33*** (3.52,5.33)	2.78*** (2.19,3.54)
West	0.5*** (0.42,0.6)	0.48*** (0.4,0.58)	1.01 (0.73,1.38)	0.98 (0.71,1.35)
South	0.84** (0.73,0.97)	0.92 (0.79,1.07)	0.34*** (0.22,0.51)	0.38*** (0.24,0.58)
Education				
No education®	1.00	1.00	1.00	1.00
Primary	1.05 (0.87,1.27)	1.02 (0.84,1.24)	0.82 (0.64,1.05)	0.74** (0.58,0.96)
Secondary	0.58*** (0.5,0.68)	0.76*** (0.65,0.89)	0.36*** (0.3,0.43)	0.43*** (0.35,0.52)
Higher	0.51*** (0.43,0.6)	0.51*** (0.42,0.61)	0.24*** (0.18,0.31)	0.31*** (0.23,0.42)
Religion				
Hindu®	1.00	1.00	1.00	1.00
Muslim	1.17*** (1.05,1.31)	1.05 (0.93,1.19)	0.89 (0.71,1.11)	0.96 (0.75,1.24)
Others	2.54*** (2.31,2.79)	1.44*** (1.27,1.62)	3.12*** (2.68,3.63)	1.28** (1.04,1.57)
Social category				
SC/ST®	1.00	1.00	1.00	1.00
OBC	0.54*** (0.5,0.59)	0.76*** (0.69,0.83)	0.31*** (0.26,0.36)	0.48*** (0.4,0.58)
Others	0.67*** (0.61,0.74)	0.84*** (0.75,0.94)	0.39*** (0.32,0.47)	0.53*** (0.43,0.67)
Wealth index				
Poor®	1.00	1.00	1.00	1.00
Middle	0.79*** (0.72,0.87)	0.95 (0.86,1.06)	0.52*** (0.43,0.63)	0.69*** (0.57,0.84)
Rich	0.64*** (0.58,0.69)	0.84*** (0.75,0.94)	0.39*** (0.33,0.47)	0.64*** (0.52,0.8)
Marital status				
Never married®	1.00	1.00	1.00	1.00
Married	2.09*** (1.9,2.31)	1.24*** (1.12,1.39)	1.65*** (1.45,1.89)	1.06 (0.9,1.26)
Others	2.96*** (1.62,5.39)	1.87 (1,3.49)	1.68 (0.79,3.54)	0.66 (0.31,1.42)

[Table/Fig-3]: Unadjusted and adjusted odds ratio derived by bivariate and multivariate logistic regression for tobacco smoking.
**p<0.05; ***p<0.01

	Male		Female	
Variables	**Unadjusted OR**	**Adjusted OR**	**Unadjusted OR**	**Adjusted OR**
Age				
15-19®	1.00	1.00	1.00	1.00
20-24	2.38*** (2.22,2.55)	2.69*** (2.49,2.91)	2.27*** (2.14,2.41)	1.73*** (1.61,1.87)
Place of residence				
Urban®	1.00	1.00	1.00	1.00
Rural	1.56*** (1.43,1.69)	0.88** (0.8,0.97)	1.39*** (1.29,1.49)	0.67*** (0.62,0.73)

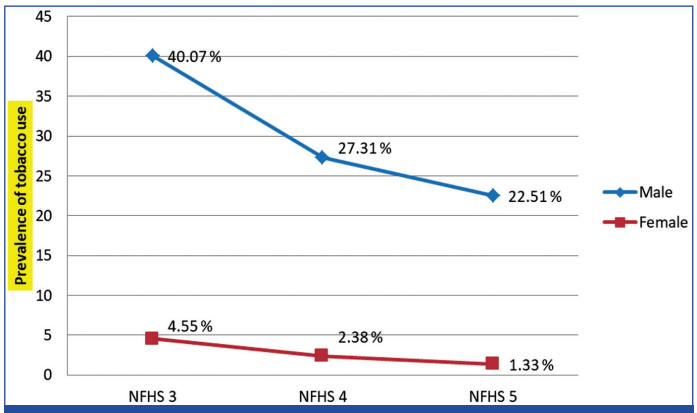
Region				
North®	1.00	1.00	1.00	1.00
Central	3.01*** (2.7,3.35)	2.17*** (1.94,2.44)	1.68*** (1.5,1.88)	1.34*** (1.19,1.5)
East	2.01*** (1.78,2.28)	1.26*** (1.1,1.44)	0.92 (0.8,1.06)	0.54*** (0.47,0.62)
North-east	2.66*** (2.35,3.01)	2.03*** (1.76,2.33)	9.47*** (8.56,10.48)	5.32*** (4.75,5.97)
West	3.1*** (2.74,3.51)	2.82*** (2.47,3.21)	2.6*** (2.29,2.95)	2.43*** (2.14,2.77)
South	0.43*** (0.36,0.53)	0.41*** (0.33,0.49)	0.35*** (0.28,0.43)	0.38*** (0.3,0.47)
Education				
No education®	1.00	1.00	1.00	1.00
Primary	1.19** (1.02,1.39)	1.18 (1,1.39)	0.77*** (0.7,0.85)	0.62*** (0.56,0.68)
Secondary	0.43*** (0.38,0.48)	0.59*** (0.52,0.68)	0.26*** (0.24,0.28)	0.3*** (0.27,0.32)
Higher	0.21*** (0.18,0.25)	0.26*** (0.22,0.31)	0.08*** (0.07,0.09)	0.13*** (0.11,0.15)
Religion				
Hindu®	1.00	1.00	1.00	1.00
Muslim	0.82*** (0.74,0.91)	0.98 (0.87,1.11)	1.24*** (1.13,1.35)	1.28*** (1.15,1.43)
Others	0.88** (0.79,0.98)	0.71*** (0.62,0.81)	5.03*** (4.73,5.35)	1.69*** (1.55,1.84)
Social category				
SC/ST®	1.00	1.00	1.00	1.00
OBC	0.76*** (0.71,0.81)	0.89*** (0.82,0.97)	0.28*** (0.26,0.3)	0.57*** (0.52,0.62)
Others	0.41*** (0.37,0.45)	0.52*** (0.46,0.58)	0.33*** (0.31,0.36)	0.46*** (0.42,0.52)
Wealth index				
Poor®	1.00	1.00	1.00	1.00
Middle	0.59*** (0.54,0.64)	0.74*** (0.67,0.81)	0.51*** (0.47,0.55)	0.7*** (0.64,0.76)
Rich	0.31*** (0.28,0.33)	0.44*** (0.4,0.49)	0.24*** (0.22,0.26)	0.47*** (0.42,0.52)
Marital status				
Never married®	1.00	1.00	1.00	1.00
Married	3.05*** (2.8,3.31)	1.42*** (1.29,1.56)	2.74*** (2.58,2.9)	1.8*** (1.67,1.93)
Others	3.54*** (2.05,6.11)	1.39 (0.78,2.49)	9.55*** (8.04,11.35)	3.45*** (2.85,4.19)

[Table/Fig-4]: Unadjusted and adjusted odds ratio derived by bivariate and multivariate logistic regression for smokeless tobacco use.
**p<0.05; ***p<0.01

The multivariable logistic regression analysis of various sociodemographic factors showed that among male youths, higher age, hailing from the east or northeast region, education up to primary school, Muslim and others by religion, married, and "others" category by marriage had higher adjusted odds of smoking tobacco. Likewise among males, higher age, hailing from the central, east, northeast, or west region, education up to primary school, married, and "others" category by marriage had higher adjusted odds of using smokeless tobacco.

Among female youths, factors such as higher age, hailing from the central or northeast region, "others" by religion, being married had higher adjusted odds of smoking. Similarly, higher age, hailing from the central, northeast, or west region, Muslim and "others" by religion, married, and "others" category by marriage had higher adjusted odds of using smokeless tobacco [Table/Fig-3,4].

An overall declining trend of tobacco use among male and female youths over NFHS-3 (2005-2006), NFHS-4 (2015-2016), and NFHS-5 (2019-2021) has been depicted in [Table/Fig-5]. The prevalence of tobacco use in males was 40.07%, 27.31%, and 22.51% during NFHS-3, 4, and 5, respectively. Similarly, the prevalence of tobacco use in females was 4.55%, 2.38%, and 1.33% during NFHS-3, 4, and 5, respectively.



[Table/Fig-5]: Trend of tobacco use among male and female youths over NFHS-3, 4 and 5.

DISCUSSION

The secondary analysis of NFHS-5 data showed that the prevalence of smoking and smokeless tobacco use was 14.52% and 15.40%, respectively, among male youths of 20-24 years, and it was 0.31% and 1.53% in females of a similar age. The findings were in contrast to Global Adult Tobacco Survey (GATS)-2 data, which showed a prevalence of current smoking and smokeless tobacco use of 5% and 10.9%, respectively, and 2% of the respondents were using both forms of tobacco. However, it was similar to GATS-1 data (2009-2010), wherein 22.1% of young persons used any form of tobacco products.

A 71.89% of males and 69.71% of females in present study had completed their secondary education, while the NFHS-4 study showed that every second woman and 56% of men ages 15-24 have completed at least 10 years of schooling.

Educational attainment was higher among the youth in urban areas than rural areas and showed an increasing trend with an increase in wealth status. 89.11% of males and 65.6% of females were never married during the time of the survey, but according to NFHS-4, among young women, 59% were never married. The proportion of the never married among young men was 88% in the study [21].

In present study, males were found to use any form of tobacco more compared to females. This finding supports a study where tobacco

use, particularly smoking, was seen predominantly among male children and adolescents in India [22]. Region-wise comparison of smoking showed males in the northeast region use 2.98 times more compared to the north region (p<0.01). Respondents from the northeast were more likely to use tobacco compared to other regions in the country, and this has been consistently reported in Global Adult Tobacco Survey (GATS)-1, GATS-2, and District Level Household Survey (DLHS)-4 [1,19,20,23].

In present study, the married and "others" category consisting of widowed/divorced/separated individuals were more likely to smoke and use smokeless tobacco. Marital status was an important social contextual factor in predicting tobacco use. The present finding was contrary to another study where the inability to cope with stress was responsible [1].

The NFHS-5 survey showed that males and females with a poor wealth index had a higher prevalence of tobacco use. Being poor was significantly associated with a higher risk of using smokeless tobacco among males and using smokeless tobacco and dual use of tobacco among females in India [24]. The relation between these socioeconomic markers and tobacco consumption was similar to relations observed in developed countries and other studies done in previous decades in India [15,25].

Male youths residing in rural areas were 1.03 times more likely to smoke and 1.56 times more likely to use smokeless tobacco compared to urban youths. The odds of using any form of tobacco were higher among rural youth. This was consistent with findings from studies done elsewhere in India [26,27]. However, the health of people living in rural areas is impacted more by tobacco use due to socioeconomic factors, culture, policies, and lack of proper healthcare [28].

In present study, the odds of using smoking and smokeless tobacco decreased with higher educational status. As evident from several studies in India, there was an inverse relationship between tobacco use and education [27,29,30], which may be due to the fact that educated individuals are more aware of the consequences of tobacco use.

Various sociodemographic factors among youths in both genders showed that higher age, hailing from the northeast region, education up to primary school, being Muslim or belonging to other religions, and being in the married or others category by marriage had higher adjusted odds of smoking tobacco and using smokeless tobacco. The findings reported in this paper validate studies that highlighted the socioeconomic and demographic determinants of substance use in India [31,32].

The present study showed an overall declining trend of tobacco use among male and female youths over NFHS-3 (2005-2006), NFHS-4 (2015-2016), and NFHS-5 (2019-2021). A trend analysis of tobacco use in India, using nationally representative surveys, documented an increase in the prevalence of any smokeless tobacco use from 15% in 1987 to 23.4% in 2005, while there was a slight decline in any smoked tobacco from 19.8% to 18.3% in the same period [33]. Recent data in India shows that from the Global Adult Tobacco Survey (2009-2010) to the Global Adult Tobacco Survey (2016-2017), there has been a 4.5% decline in the prevalence of smokeless tobacco use from 25.9% to 21.4% and a 3.3% decline in smoking, from 14.0% to 10.7% [33]. Among women, the reduction in both forms of tobacco use was 1.05 times from NFHS-4, which is similar to a study done by Ghosal S et al., where there was a reduction in the prevalence of SLT use among women in India between GATS 1 (18.4%) and GATS 2 (12.8%) [34].

Limitation(s)

Due to a cross-sectional study design, claims of causation and temporal association cannot be made between the pattern of tobacco use and the studied variables. There could be reporting bias because of self-reported data about tobacco use. Factors such as parental education, parental occupation, and parental tobacco use were not studied. Other substances used, such as alcohol or illicit drugs, which are associated with tobacco use, were not included.

CONCLUSION(S)

There was an overall decreasing trend in tobacco use among male and female youths across the NFHS surveys conducted in 2005-2006, 2015-2016, and 2019-2021. Male gender, higher age, rural area, northeast region of India, poor wealth index, education up to primary level, and being in the married or others category were associated with using both forms of tobacco. The fact that most young people in India start using both smokeless tobacco and smoking regularly before the age of 20 years focus the opportunity to target prevention efforts among young people and save millions of lives. Implementing and enforcing evidence-based tobacco control strategies by policymakers and the Ministry of Health and Family Welfare can substantially improve the health of the young, hence securing the future of India.

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