# **Original Research Article**

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# Pattern of current tobacco use in a rural block of North India

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## **ABSTRACT**

**Background:** Tobacco is the only legal drug that kills many of its users when used exactly as intended by manufacturers. WHO has estimated that tobacco use (smoking and smokeless) is currently responsible for the death of about six million people across the world each year. Although often associated with ill-health, disability and death from non-communicable chronic diseases, tobacco smoking is also associated with an increased risk of death from communicable diseases. This study was conducted with aim to observe the current pattern of tobacco use in a rural block of north India.

**Methods:** The study was conducted in Lakhanmajra block (rural) of Haryana, India, in year 2015-2016 among 1000 study subjects aged 15-64 years selected by systematic random sampling technique.

**Results:** The overall prevalence of current tobacco-smoking use to be 12.8% and it was higher among males (11.2%) as compared to females (3.2%). The median age for initiation of smoking tobacco was 18 years, smokeless tobacco was 20 years.

**Conclusions:** Our study stresses is the need to have rural orientation in the National Tobacco Control Programme since the poorly educated individuals living in rural areas are at the maximum risk of using tobacco, identifying ways and means of reaching out to these communities will be critical to the success or failure of the program.

Keywords: Tobacco, Smoking, Non-communicable, STEPs

## INTRODUCTION

Tobacco is the only legal drug that kills many of its users when used exactly as intended by manufacturers. WHO has estimated that tobacco use (smoking and smokeless) is currently responsible for the death of about six million people across the world each year with many of these deaths occurring prematurely. This total includes about 600,000 people are also estimated to die from the effects of second-hand smoke. Although often associated with ill-health, disability and death from non-communicable chronic diseases, tobacco smoking is also associated with an increased risk of death from communicable diseases. Under a UN mandate to address four non-communicable diseases (NCDs), the World Health Assembly established in 2013 a global voluntary tobacco target to help reduce

prevent premature avoidable mortality from NCDs. The agreed global tobacco target is a 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years. I

Of the various drugs abused, the most widely distributed and commonly used drug in the world is 'Tobacco'. Many social, economic and political factors have contributed to the global spread of tobacco consumption. The fast changing social milieus, social sanctions and other factors are mainly contributing to this proliferation and has posed serious challenge to individuals, families, societies and nations. Tobacco is cultivated around the world and can be legally purchased in all countries. The dried leaf is smoked in the form of manufactured cigarettes, bidis, cigars, kreteks, pipes and sticks. It is

also chewed throughout the world, but principally in South and Southeast Asia, often together with areca nuts and staked lime.<sup>2</sup>

Over the past four decades, tobacco use has caused an estimated 12 million deaths in the world, including 4.1 million deaths from cancer, 5.5 million deaths from cardiovascular diseases, 2.1 million deaths from respiratory diseases and 94,000 infant deaths related to mothers smoking during pregnancy. According to WHO (2009) consumption of tobacco has been growing at the rate of 2% to 5% per annum. It is estimated that number of deaths due to tobacco will increase from 3 million per year worldwide to 70 million per year by 2025.<sup>3</sup>

Health behaviour does not occur in a vacuum, but is influenced by normative values, lay health beliefs, and the surrounding environment. Tobacco use is generally more prevalent among lower-income populations, those with mental disorders (including depression) and, in most countries, among men and boys.<sup>4</sup>

This study was conducted with aim to study the current pattern of tobacco use in a rural block of north India.

#### **METHODS**

The analysis is based on data collected from a cross sectional survey of diabetes mellitus type 2 disease and its risk factors which was carried out in Lakhanmajra block (rural) of Haryana, India, in year September 2015-August 2016. The study subjects were selected by systematic random sampling technique. These subjects were interviewed using a pretested proforma after obtaining their consent. A total of 1000 subjects were taken for the study purpose assuming the prevalence of Diabetes mellitus of 9.1%. Equal number of participants of both sexes were selected and further divided into age groups 15-24, 25-34, 35-44, 45-54 and 55-64.

## Inclusion criteria

Inclusion criteria were persons aged between 15 to 64 years; known case of type II diabetes mellitus.

#### Exclusion criteria

Exclusion criteria was those who were not willing to participate; known case of type I diabetes mellitus; pregnant women; migrants (those who stayed in the area for less than six months); bed ridden patients those who were unable to participate in the study.

Data were collected on parameters related to tobacco use, alcoholism, diet, physical activity, blood pressure, waist circumference, body mass index, and diabetes mellitus. The definitions used for various parameters were as per the WHO STEPS guidelines. 6-8 Current daily smokers were defined as those who were currently smoking tobacco daily in the form of cigarettes, bidis (hand-

manufactured cigarettes consisting of tobacco wrapped in a temburini leaf), hookah (Indian water pipe), chillum, or any other smoked form. Similarly, current daily smokeless tobacco users were defined as those who were currently using chewable tobacco products: khaini (tobacco-lime mixtures), gutkha (tobacco with betel nut, catechu, lime, and flavorings), naswar (snuff), or zarda paan (betel quid with tobacco) daily. Information was gathered regarding the age of initiation of smoking and the self-reported quantity of specific tobacco products consumed by the current daily users.

Collected data were entered in the MS Excel spreadsheet, coded appropriately and later cleaned for any possible errors. Analysis was carried out using SPSS (Statistical Package for Social Studies) for Windows version 20.0. Categorical data were presented as percentages (%). Pearson's chi square test was used to evaluate differences between groups for categorized variables.

Logistic regression analysis was done to evaluate factors significantly associated with smoking and risk factors. Binary logistic regression analysis was used to calculate adjusted odds ratio with 95% C.I.

#### **RESULTS**

Table 1 depicts that the overall prevalence of current tobacco-smoking use to be 12.8% (128/1000) and it was higher among males (11.2%) as compared to females (3.2%). There was an increase in prevalence with age, in both males and females.

The overall prevalence of current tobacco-smokeless use was found to be 1.8% (18/1000) and it was higher among males (3.2%) as compared to females (0.4%).

The main form of smokeless tobacco consumed was chewing tobacco i.e. zarda among males and snuffed tobacco among females. The role of this type of tobacco use was not contributing significantly as NCDs risk factor in these rural areas.

Table 2 reveals that the median age for initiation of smoking tobacco was 18 years, smokeless tobacco was 20 years and alcohol among study participants was 22 years. The median age for both smoking tobacco and smokeless tobacco variables were observed to be lower among males as compared to females.

From the Table 3 it was found out that 7.4% (74/1000) participants smoke tobacco 5-10 times per day followed by 2.8% (28/1000) smokes less than 5 times a day and 2.6% (26/1000) were those who smokes more than 10 times per day. It was found that among male smokers were majority (13.6%) smokes 5-10 times per day and 4% smokes less than 5 times a day and 4.8% were smoking more than 10 times a day.

Table 1: Prevalence of current tobacco and current smokeless tobacco use.

Age groups (in years)	Current tobacco smoke			Current smokeless tobacco use		
	Male N=500	Female N=500	Total N=1000	Male N=500	Female N=500	Total N=1000
15-24	8/100 (8.0)	0/100 (0.0)	8/200 (4.0)	0/100 (0.0)	0/100 (0.0)	0/200 (0.0)
25-34	10/100 (10.0)	0/100 (0.0)	10/200 (5.0)	2/100 (2.0)	0/100 (0.0)	2/200 (1.0)
35-44	28/100 (28.0)	2/100 (2.0)	30/200 (15.0)	6/100 (6.0)	0/100 (0.0)	6/200 (3.0)
45-54	36/100 (36.0)	6/100 (6.0)	42/200 (21.0)	4/100 (4.0)	0/100 (0.0)	4/200 (2.0)
55-64	30/100 (30.0)	8/100 (8.0)	38/200 (19)	4/100 (4.0)	2/100 (2.0)	6/200 (3.0)
Total	112/500 (11.2)	16/500 (3.2)	128/1000 (12.8)	16/500 (3.2)	2/500 (0.4)	18/1000 (1.8)

Table 2: Age of initiation for tobacco among study population.

Variables		Mean±SD	Median (IQR)
A a a of initiation for amalina	Male	19.30±6.277	18 (16-20)
Age of initiation for smoking tobacco (in years)	Female	40.44±8.031	45 (30-46.50)
tobacco (m years)	Total	22.06±9.660	18 (16-21.75)
. 6 6 11	Male	16.75±6.568	18 (15-21)
Age of initiation for smokeless tobacco (in years)	Female	50±0.00	50 (50-50)
tobacco (iii years)	Total	20.44 ±12.396	20 (15-21.75)

Table 3: Duration and frequency of current tobacco (both smoke and smokeless) use among study participants.

	Female (%)	Male (%)	Total (%)	
Number of times smokes per day				
Smokers				
<5	8 (1.6)	20 (4.0)	28 (2.8)	
5-10	6 (1.25)	68 (13.6)	74 (7.4)	
>10	2 (0.4)	24 (4.8)	26 (2.6)	
Non smoker	484 (96.8)	388 (77.6)	872 (87.2)	
Total	500 (100)	500 (100)	1000 (100)	
Number of times smokeless tobac	Number of times smokeless tobacco per day			
Smokers				
<5	2 (0.4)	14 (2.8)	16 (1.6)	
5-10	0	2 (0.4)	2 (0.2)	
>10	0	0	00	
Non smoker	498 (99.6)	484 (96.8)	982 (98.2)	
Total	500	500	1000	

Table 4: Independent association of socio-demographic variables with current tobacco smoking (logistic regression analysis) (N=1000).

Variables	Current smoking			
variables	Prevalence (%)	aOR (95% C.I.)	P value	
Gender				
Female	16/500 (12.5)	Reference		
Male	112/500 (22.4)	4.005 (2.036-7.880)	0.000	
Age group (years)				
15-24	8/200 (4)	Reference	0.002	
25-34	10/200 (5.0)	0.219 (0.080-0.598)	0.003	
35-44	30/200 (15.0)	0.251 (0.098-0.638)	0.004	
45-54	42/200 (21.0)	0.683 (0.349-1.336)	0.265	
55-64	38/200 (19)	1.165 (0.648-2.095)	0.610	
Educational status				

Illiterate	44/242 (18.2)	Reference	0.000
Primary	10/188 (5.3)	0.278 (0.096-0.802)	0.018
Middle	22/176 (12.5)	0.107 (0.035-0.327)	0.000
High School	28/308 (9.1)	0.300 (0.118-0.760)	0.011
Graduate and above	24/86 (27.9)	0.162 (0.069-0.381)	0.000
Occupation			
None	40/738 (5.4)	Reference	0.000
Labourer	18/52 (34.6)	0.380 (0.159-0.908)	0.029
Business	12/34 (35.3)/	0.959 (0.349-2.635)	0.936
Cultivation	34/90 (37.8)	1.888 (0.695-5.130)	0.213
Service	24/86 (27.9)	2.188 (0.942-5.081)	0.069
Socio-economic status			
Upper middle	6/56 (10.7)	Reference	0.051
Lower middle	62/506 (12.3)	2.045 (0.714-5.857)	0.183
Upper lower	48/380 (12.6)	3.808 (1.208-12.001)	0.022
Lower	12/58 (20.7)	5.161 (1.313-20.287)	0.019

Regarding the frequency of smokeless tobacco it was found that 1.6% used less than 5 times per day and only 0.2% found that who uses 5-10 times a day. It was more in males (2.8%) than females (0.4%) in using less than 5 times a day. Only 0.4% males were using 5-10 times per day (Table 3).

Stepwise logistic regression analysis revealed that the prevalence of current tobacco smoking use with the above mentioned socio-demographic variables was found to be statistically significant. Males were four times (aOR: 4.005, CI: 2.036 -7.880, p-0.000) more likely to smoke than females. Age was also a very important predictor of current smoking status which showed an increasing trend with 25-34(aOR: 0.219, CI: 0.080-0.598, p- 0.003) years age group and 35-44(aOR: 0.251, CI: 0.098-0.638, p- 0.004) years age groups. Education status of subjects also shows the positive association with current smoking. Labourer (aOR: 0.380, CI: 0.159 -0.908, p-0.029) by occupation also showed positive association. Upper lower (aOR: 3.808, CI: 1.208 -12.001, p-0.022) and lower (aOR: 5.161, CI: 1.313 -20.287, p-0.019) socio economic status subjects were three and five times more involved in smoking as compared to upper middle class (Table 4).

#### **DISCUSSION**

As per the observations of this study, the overall prevalence of current tobacco-smoking use was found to be 12.8% and it was higher among males (11.2%) as compared to females (3.2%). There was an increase in prevalence with age, in both males and females. Among males, it increased from 8.0% in 15-24 years age group to 10.0%, 28.0% & 36.0% in 25-34 years, 35-44 years & 45-54 years age group respectively and then slightly decreased in 55-64 years age group (30.0%). The similar trend was seen among females with increase from 2.0% in 35-44 years age group to 8% in 55-64 years. This difference in prevalence by gender could be attributed to socially unacceptable tobacco use among females and

difference in age groups may be attributed to financial independence and work place culture in 25-34 years age group and beyond among males. Smoking has been accepted at the social level as a routine habit and is very commonly seen in all social gatherings particularly in rural areas. Contrary to this smoking among females is considered as an unacceptable habit.

Bhattacherjee et al in West Bengal observed the prevalence of current tobacco use as 57.5% among the study population which was quite higher than our study.<sup>9</sup> The prevalence of current tobacco smoking (12.8%) as observed in our study was comparable to national average of 14.0% (males-24.3%, females 2.9%) as revealed by the 2009-2010 Global Adult Tobacco Survey (GATS). 10 Mishra et al observed that the current tobacco use by tribes in Assam was 84.3% (94% men and 73% women). 11 Kumar et al in rural Wardha found the overall prevalence of current smokers as 14.2% which was similar to our study. 12 Thakur et al in their study from Punjab reported the prevalence of current tobacco use (smoking as well as smokeless form) as 11.3% (95% CI: 9.3-13.3). More men (13.1%) smoked than women (0.3%). Overall current tobacco smoking (7.2%, 95% CI: 5.5-8.9) was more prevalent than smokeless tobacco consumption (5.2%; 95% CI: 3.8-6.5). Prevalence of tobacco smoking was high among adults aged 18-44 years old (8.0%, 95% CI: 6.1-10.0) and in urban areas (9%; 95% CI: 5.8-12.1) compared to those in rural areas (6.0%; 95% CI: 4.2–7.8).<sup>13</sup>

Other community based studies conducted in rural India by Sugathan et al in Kerala and Bhardwaj et al in Nagpur, Maharashtra showed higher prevalence of current tobacco-smoking use among males as 40% & 20.5% respectively than in females 0.4% & 0.0% respectively. A study conducted by Mishra et al found almost 7 times (aOR: 6.82; 95% CI: 3.14-14.78; p value <0.001) higher in males than females. In our study, median age for initiation of smoking in males was found to be 18 years (IQR 16.0-20.0) and 45 years (IQR 30.0-46.5) in females. In a study conducted by Krishnan et al,

the corresponding figures were found as 20.0 years (IQR 17.0-25.0), and 31.0 years (IQR 25.0-40.0) which was different in case of women in comparison to our study. However, Basu et al in West Bengal reported the median age for initiation of tobacco use as 16 and 18 years in males and females respectively, which was comparatively lower than our study. This might be because of interstate differences in practice of this unhealthy habit.

#### Smokeless tobacco use

In our study, the overall prevalence of current tobaccosmokeless use was found to be 1.8% and it was higher among males (3.2%) as compared to females (0.4%). Among males, it increased from 2.0% in 25-34 years age group to 6.0% in 35-44 years age group and then decreased to 4.0% in 45-54 and 55-64 years age group. The prevalence was found to be highest in 55-64 years age group (2.0%) among females and none of them reported use of current smokeless tobacco in 15-24, 25-34, 35-44 and 45-54 years age group. Smokeless tobacco consumption is not a routine practice in the rural areas of Haryana. This present prevalence could be mainly attributed to the migratory population from neighboring states like Uttar Pradesh and Bihar.

Garg et al observed overall smokeless tobacco use as 12% while it was 16.8% in males and 8.1% in females. Rrishnan et al reported prevalence of current tobaccosmokeless use as 7.1% in males and 1.2% in females, which was comparable to our study. However, Bhardwaj et al in Nagpur reported the prevalence of smokeless tobacco use among females to be 32.8%, which was comparatively much higher than our study. 15

#### CONCLUSION

In light of the existing evidence and the results of the present study, it is clear that the tobacco control policy in India is not geared adequately toward addressing the issue and there is a need to modify the COTPA and widen its ambit. What our study stresses is the need to have rural orientation in the National Tobacco Control Programme that is currently being developed by the Government of India. Since the poorly educated individuals living in rural areas are at the maximum risk of using tobacco, identifying ways and means of reaching out to these communities will be critical to the success or failure of the program.

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