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## Prevalence of ever tobacco use among school going adolescents in Rohtak district of Haryana

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### Abstract

Tobacco use is today's major public health concern in our country, which can be largely reduced by primordial and primary prevention. Global Youth Tobacco Survey (GYTS) India reported 17.5% of 13-15 year old students are using tobacco in some form. In Haryana state, a Global Youth Tobacco Survey (GYTS) was conducted in 2003 among school students in grades 7-10. The objective of the study was to evaluate the prevalence of tobacco use and socio-demographic characteristics among school going adolescents. This cross-sectional study was carried out during the period of September 2012 to August 2013. Multistage random sampling was used in this study. The study was carried out in Co-educational schools of urban area of District Rohtak. Appropriate statistical tests were used for analysis. It was found that, in rural areas, the prevalence of ever tobacco use was found to be 6.8%. The present study found that in urban areas, the prevalence of ever tobacco use was 7.0%. It was higher in males (10.2%) as compared to females (3.1%). This present study confirmed the high burden of tobacco use in these areas. Health education programs should be provided to adolescent students to raise the level of awareness of the hazards of tobacco use and to change their perceptions.

**Keywords:** prevalence, tobacco, urban, rural, Haryana

### Introduction

The tobacco epidemic is one of the biggest public health threats the world has ever faced. Because there is a lag of several years between when people start using tobacco and when their health suffers, the epidemic of tobacco-related disease and death has just begun.<sup>1</sup>

Tobacco use usually starts in adolescence and continues into adult life, meaning that many future victims of tobacco use are today's children. Adolescents and young adults of colleges are often targeted by the tobacco industry for marketing. Presently, adolescents are increasingly exposed to changing lifestyles that have a negative impact on health.

Global Youth Tobacco Survey (GYTS) India supported by CDC and WHO in the period 2000-2004. As per this survey, 17.5% of 13-15 year old students are using tobacco in some form. In Haryana state, a Global Youth Tobacco Survey (GYTS) was conducted in 2003 among school students in grades 7-10. They revealed that 7.4% of students had ever smoked cigarettes (Boys = 8.6%, Girls = 3.8%), 7.1% currently use any tobacco product (Boys = 8.1%, Girls = 3.7%), 3.4% currently smoke cigarettes (Boys = 4.3%, Girls = 0.6%) and 4.0% currently use tobacco products other than cigarettes (Boys = 4.1%, Girls = 3.1%).<sup>2</sup>

Considering the higher prevalence of tobacco use (smoked and smokeless) among school going adolescents in India and very few studies had been carried out in government and private schools of rural and urban area of Haryana state. Therefore the present study was conducted in the rural and urban area of district Rohtak Haryana.

### Aim and objectives

To study the prevalence of tobacco use and socio-demographic characteristics among school going adolescents.

### Materials and methods

### **Study Area**

The study was carried out in Co-educational schools of urban area of District Rohtak and rural field practice area attached to the Department of Community Medicine, Pt. B D Sharma PGIMS, Rohtak.

### **Study Design**

A cross-sectional type of epidemiological study.

### **Sample Size Determination**

The sample size for this study was calculated as 1251 using the formula  $n = \frac{4p(1-p)}{d^2}$  with prevalence of 7.4% (according to GYTS Haryana) and allowable error 20% (CI 95%). Therefore, a total of 1260 children were covered in the present study.

### **Study Subjects**

The students of class 7<sup>th</sup> to 10<sup>th</sup> were included in the study.

### **Sampling Method and Data Collection**

The study was carried out in government and private schools of rural and urban areas of District Rohtak. The list of Co-educational governmental and private schools of study area and list of students studying in 7<sup>th</sup> to 10<sup>th</sup> grades in these schools was obtained from the District Education Office, Rohtak. Out of these government and private schools, 6 schools (3 government and 3 private) were selected randomly from urban and rural area. From each school, 105 students were selected, proportionately to the number of students in each class. The students from each class were selected by systematic random sampling method. The researcher contacted the principals of schools personally. The objectives and nature of the study were explained to the principal of each selected school and a verbal consent was sought to carry out the survey in the schools. All the eligible students present at the time of visit were included for the survey and those, absent, were excluded. The students of the selected classes assembled in their class room, the purpose of the survey was explained and assurance about the confidentiality of the information was given to the students. Each student was free to participate or not to in the survey. Absence of the school personnel in the classrooms was ensured to encourage the students to eliminate bias.

All the information was collected on semi-structured pretested proforma. Different variables like age group, class, gender, area, type of family, type of school, tobacco use among family members, pocket money received, tobacco use among teachers of study subjects, knowledge about health problems attributed to tobacco use, place of tobacco use, source of obtaining tobacco, influencing factors for tobacco use, age at initiation, desire to quit tobacco and reasons for quitting (desire) tobacco etc. were included in the proforma.

### **Data Analysis**

Data was analyzed using SPSS (Statistical Package for Social Sciences) for Windows version 20.0 and online GraphPad software (Prism 5 for Windows) version 5.01. Categorical data are presented as percentage (%). Pearson's chi-square test was used to evaluate differences between groups for categorised variables. In case expected cell count was less than 5 in >20% cells, Fisher's exact test was used.

### **Observations**

The present study involved 1260 subjects and found that nearly half of the study subjects (54.5%) were in age group 10-13 years, followed by 40.2% in 14-15 and 5.2% in 16-19 years age group. Out of total subjects, 53.3% were males and 46.7% were females. Majority of subjects belonged to the general caste (65.3%). More than half (55.6%) of subjects lived in joint families while the rest

lived in nuclear families. The study subjects were equally distributed between government and private schools, and rural and urban schools as shown in Table 1

**Table 1: Socio- demographic characteristics of study subjects (N=1260)**

Socio- demographic characteristics		Frequency	Percentage
Age group	10-13 years	687	54.5
	14-15 years	507	40.2
	16-19 years	66	5.2
Gender	Male	671	53.3
	Female	589	46.7
Class	7 <sup>th</sup>	272	21.6
	8 <sup>th</sup>	344	27.3
	9 <sup>th</sup>	316	25.1
	10 <sup>th</sup>	328	26.0
School	Government	630	50.0
	Private	630	50.0
Caste	General	823	65.3
	BC	169	13.4
	SC	268	21.3
Family	Joint	701	55.6
	Nuclear	559	44.4
Place	Rural	630	50.0
	Urban	630	50.0

**Table 2: Characteristics wise prevalence of ever tobacco use among study subjects (N=1260)**

Characteristics	Ever tobacco user			Chi Sq value	p Value
	Yes	No	Total		
Class	7 <sup>th</sup>	21(7.7)	251(92.3)	1.54	0.672
	8 <sup>th</sup>	24(7.0)	320(93.0)		
	9 <sup>th</sup>	24(7.6)	292(92.4)		
	10 <sup>th</sup>	18(5.5)	310(94.5)		
Gender	Male	64(9.5)	607(90.5)	15.5	0.000
	Female	23(3.9)	566(96.1)		
School	Govt.	48(7.6)	582(92.4)	1.00	0.317
	Private	39(6.2)	591(93.8)		
Caste	General	52(6.4)	765(93.6)	1.46	0.482
	SC	20(7.3)	254(92.7)		
	BC	15(8.9)	154(91.1)		
Family	Joint	43(6.3)	658(93.7)	1.46	0.227
	Nuclear	44(7.9)	515(92.1)		
Area	Rural	43(6.8)	587(93.2)	0.123	0.912
	Urban	44(7.0)	586(93.0)		

(Figures in parentheses indicate percentages)

The above table depicts that total prevalence of ever tobacco use was 6.9% and the prevalence of ever tobacco use according to class was found to be maximum in 7<sup>th</sup> class (7.7%) followed by 9<sup>th</sup> class (7.6%). It was higher in males (9.5%) than females (3.9%). Ever tobacco use was found to be more in nuclear (7.9%) than joint (6.3%) families. School wise prevalence of ever tobacco use was higher in government schools (7.6%) than private schools (6.2%). According to caste, maximum prevalence was found in backward

caste (8.9%) while minimum (6.4%) in general caste. Only gender wise prevalence of ever tobacco use was found to be statistically significant ( $p = 0.000$ ) among all the mentioned variables.

**Table 3: Area wise prevalence of ever tobacco users in Government and Private school**

Area	Government			Private		
	Yes	No	Total	Yes	No	Total
Rural	25(7.9)	290(92.1)	315(100.0)	18(5.7)	297(94.3)	315(100.0)
Urban	23(7.3)	272(92.7)	315(100.0)	21(6.7)	294(92.3)	315(100.0)
Total	48(7.6)	562(89.2)	630(100.0)	39(6.2)	591(93.8)	630(100.0)
Chi sq Value	0.411			0.246		
p value	0.949			0.620		

(Figures in parentheses indicate percentages)

As shown in above table, total prevalence in government schools (7.6%) was higher than private schools (6.2%) among ever tobacco users. In rural area the prevalence of ever tobacco use was higher in government schools (7.9%) as compared to private schools (5.7%), similarly in urban area also the prevalence was found to be was higher in government school (7.3%) as compared to private school (6.7%). The area wise prevalence of ever tobacco use in government and private school was statistically non significant.

**Table 4: School wise prevalence of ever tobacco use among study subjects (N=1260)**

Character istics	Government (n=630)			Private(n=630)		
	Yes	No	Total	Yes	No	Total
<b>Class</b>						
7 <sup>th</sup>	11(8.8)	114(91.2)	125(100.0)	10(6.8)	137(93.2)	147(100.0)
8 <sup>th</sup>	14(8.3)	155(91.7)	169(100.0)	10(5.7)	165(94.3)	175(100.0)
9 <sup>th</sup>	16(9.1)	159(90.9)	175(100.0)	8(5.7)	133(94.3)	141(100.0)
10 <sup>th</sup>	7(4.3)	54(95.7)	161(100.0)	11(6.6)	156(93.4)	167(100.0)
<b>Gender</b>						
Male	40(13.4)	259(86.6)	299(100.0)	24(6.5)	348(93.5)	372(100.0)
Female	8(2.4)	323(97.6)	331(100.0)	15(5.8)	243(94.2)	258(100.0)
<b>Caste</b>						
General	26(6.8)	359(93.2)	385(100.0)	26(6.0)	406(94.0)	432(100.0)
SC	13(7.6)	159(92.4)	172(100.0)	7(6.9)	95(93.1)	102(100.0)
BC	9(12.3)	64(87.7)	73(100.0)	6(6.2)	90(93.8)	96(100.0)
<b>Family</b>						
Joint	23(6.9)	308(93.1)	331(100.0)	20(5.4)	350(94.6)	370(100.0)
Nuclear	25(8.4)	274(91.6)	299(100.0)	19(7.3)	241(92.7)	260(100.0)

(Figures in parentheses indicate percentages)

Above table revealed that in government schools, class wise prevalence of ever tobacco user was maximum in class 9<sup>th</sup> (9.1%) and minimum in class 10<sup>th</sup> (4.3%) students. While in private school prevalence of ever tobacco user was almost similar in all classes. Gender wise, males (13.4%) had much higher prevalence of ever tobacco use than females (2.4%) in government schools. While in private schools, males (6.5%) had slightly higher prevalence of ever tobacco use than females (5.8%). Caste wise prevalence of ever tobacco use in government schools was highest (12.3%) in backward caste (BC) followed by schedule caste (7.6%) and general caste

(6.8%). While in private schools, it did not differ much. Study subjects living in nuclear families (government schools: 8.4% and private schools: 7.3%) had higher prevalence of tobacco use than those living in joint families (government schools: 6.9% and private schools: 5.4%)

**Table 5: Age and gender wise prevalence of ever tobacco use in rural and urban area**

(N=1260)

Age group(in years)		Ever tobacco users		
		Male	Female	Total
Rural	10 – 13	14/163 (8.6)	7/180 (3.9)	21/343 (6.1)
	14 – 15	11/146 (7.5)	6/101 (5.9)	17/247 (6.9)
	16 – 19	4/20 (20.0)	1/ 20 (5.0)	5/40 (12.5)
	Total	29/329 (8.8)	14/301 (4.7)	43/630 (6.8)
	Chi Sq	2.63	0.562	1.91
	p Value	0.269	0.755	0.384
Age group(in years)		Ever tobacco users		
		Male	Female	Total
Urban	10 – 13	13/167(7.8)	8/177(4.5)	21/344(6.1)
	14 – 15	20/155(12.9)	0/105(0.0)	20/260(7.7)
	16 – 19	2/20(10.0)	1/6(16.7)	3/26(11.5)
	Total	35/342(10.2)	9/288(3.1)	44/630(7.0)
	Chi Sq	1.87	7.35	1.22
	p Value	0.394	0.025	0.542

(Figures in parentheses indicate percentages)

Table 9 shows that in rural areas, the prevalence of ever tobacco use was 6.8%. It was higher in males (8.8%) as compared to females (4.7%). Prevalence of ever tobacco use increased with 6.1% in 10-13 year age group to 12.5% in 16-19 year age group. A peculiar pattern was observed in females i.e. an increase in tobacco use in the 14-15 year age group (5.9%) and then again a decrease in 16-19 year age group (5.0%). Age group wise difference in both males and females was not statistically significant.

Above table also reported that in urban areas, the prevalence of ever tobacco use was 7.0%. It was higher in males (10.2%) as compared to females (3.1%). Ever tobacco users in urban areas increased along with age. The consumption of tobacco in males increased from 7.8% in 10-13 year age group to 12.9% in 14-15 year age group then again decreasing to 10% in 16-19 year age group. No females in 14-15 year age group ever used tobacco. Age group wise difference among female ever tobacco users in urban area was found to be statistically significant ( $p = 0.025$ ).

## Discussion

### Prevalence of ever tobacco use in rural area

In rural areas, the prevalence of ever tobacco use was found to be 6.8%. It was higher in males (8.8%) as compared to females (4.7%). Prevalence of ever tobacco use increased with 6.1% in 10-13 year age group to 12.5% in 16-19 year age group. A peculiar pattern was observed in females i.e. an increase in tobacco use in the 14-15 year age group (5.9%) and then again a decrease

in 16-19 year age group (5.0%). However, age group wise difference in both males and females was not statistically significant. **Mukherjee et al** carried out a study in West Bengal among school going adolescents in rural area. The authors reported the prevalence of ever tobacco use among school students to be 9.8% smokeless and 4.3% smoked tobacco.<sup>3</sup> **Verma et al** conducted a study in rural area of Haryana and they reported the prevalence of ever users of tobacco products to be 17.4% with 27% among boys and 1.6% among girls.<sup>4</sup> Our study shows low prevalence of ever tobacco users in rural area as compared to other studies which may be due to vigorous campaigning against the tobacco use and increase in implementation of tobacco control programmes and legislation like COTPA by the government of India and other related agencies in combating the menace of tobacco in the recent past.

### **Prevalence of ever tobacco use in urban area**

The present study found that in urban areas, the prevalence of ever tobacco use was 7.0%. It was higher in males (10.2%) as compared to females (3.1%). Ever tobacco users in urban areas increased along with age. The consumption of tobacco in males increased from 7.8% in 10-13 year age group to 12.9% in 14-15 year age group then again decreasing to 10% in 16-19 year age group. No female in 14-15 year age group ever used tobacco. Age group wise difference among female ever tobacco users in urban area was statistically significant ( $p = 0.025$ ) A cross-sectional study in Noida by **Naraine et al** reported prevalence of ever tobacco use among students to be 11.2% (boys: 12.2%, girls: 10.2%).<sup>5</sup> While **Madan et al** in Chennai demonstrated that ever tobacco use was 37.6% among students (41.6% males and 30.2% females).<sup>6</sup> Ever tobacco use was reported among 13.5% students (boys 14.9%, girls 10.9%) in Goa by **Pednekar et al**.<sup>7</sup> A study of tobacco use among adolescent students conducted by **Sharma et al** reported that 16% students aged 14 – 19 years had ever tried cigarette or bidi smoking.<sup>8</sup> These wide variations in ever tobacco use among the adolescents in above discussed studies may be attributed to socio-cultural differences, customs and traditions in the various states in a vast country like India. Also the prevalence of ever tobacco use in urban studies was higher among male subjects than female in all the studies which is comparable to our study.

### **Recommendations**

1. Health education programs should be provided to adolescent students to raise the level of awareness of the hazards of tobacco use and to change their perceptions
2. Teachers should be given training on formal tobacco-control education, and should have easy access to tobacco control materials.
3. Schools and colleges should strictly implement the ban on smoking in indoor locations, including dormitories, and should consider setting a smoke-free campus as a goal.

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