

**Original article:**

## Prevalence of tobacco use among school going adolescents of Guwahati city, Assam

**Madhurjya Baruah, Kanika K Baruah, Jutika Ojah, Rupali Baruah**

Department of Community Medicine, Gauhati Medical College and Hospital, Guwahati-781032, Assam, India.

Corresponding author: Madhuriya Baruah

---

**Abstract:**

**Background:** The use of tobacco among adolescents is increasing in developing countries day by day. It is estimated that around 5500 adolescents in India start using tobacco everyday, which attributes to nearly 12 million morbidities each year.

**Materials and methods:** This cross sectional study was conducted in the Government Higher Secondary schools of Guwahati city, Assam. The study was carried out from March to August'2015 among Adolescent school children, from 14-19 years of age, studying in the 9<sup>th</sup> to 12<sup>th</sup> standard. The sample size was calculated out to be around 387 by taking the prevalence of tobacco use 31.5%<sup>[6]</sup>, relative error of 15% with 95% confidence interval by using the formula ( $n=4pq/L^2$ ).

**Results:** Among them, 77.61% reported of using 'Gutkha' products and 19.4% were smoking cigarettes. For majority of students (62.69%), the age of initiation was >15 years with mean age of 15.6 years and 32.8% of students admitted of using tobacco products daily. Table 4 shows the association of tobacco use with different socio-demographic variables among the current users. It is found that tobacco use is significantly associated with educational standard, type of family and caste.

**Conclusion:** The high prevalence of Tobacco use among the students demands an urgent need for awareness raising campaign to increase their knowledge about health hazards of tobacco. Health education should be made a mandatory part of school curriculum and the school authority should be strict to ban the street vendors selling tobacco products near the school premises. Parents and guardians also have a definite role to play in prevention of development of such risk habits.

**Key words:** Tobacco use, Adolescents, School

---

**Introduction:**

The tobacco epidemic is one of the major public health problems around the world and it is the single largest preventable cause of various morbidities and mortalities in the world. Tobacco kills around 6 million people a year and nearly 80% of the more than 1 billion smokers worldwide live in low and middle income countries, where the burden of tobacco-related illness and death is heaviest<sup>[1]</sup>. In India, National Family Health Survey III (2005-06) reported that 57 percent of men, compared with 11 percent of women use some form of tobacco<sup>[2]</sup>.

WHO identifies adolescence as the period in human growth and development that occurs after childhood and before adulthood, in the age group

of 10 to 19 years<sup>[3]</sup>. The adolescent period is a time of considerable risk during which social contexts and powerful influences take place and in this phase, they are particularly vulnerable to high risk behaviors. The use of tobacco among adolescents is increasing in developing countries day by day. It is estimated that around 5500 adolescents in India start using tobacco everyday, which attributes to nearly 12 million morbidities each year<sup>[4]</sup>. The Global Youth Tobacco Survey (GYTS), India in 2009 reported that 14.6% of students were currently using any form of tobacco and 4.4% were currently smoking cigarettes<sup>[5]</sup>. This study was carried out with the objective to find out the prevalence of tobacco use among the school going

adolescents and to assess the various factors related to tobacco use.

#### **Materials and methods:**

This cross sectional study was conducted in the Government Higher Secondary schools of Guwahati city, Assam. The study was carried out from March to August'2015 among Adolescent school children, from 14-19 years of age, studying in the 9<sup>th</sup> to 12<sup>th</sup> standard. The sample size was calculated out to be around 387 by taking the prevalence of tobacco use 31.5%<sup>[6]</sup>, relative error of 15% with 95% confidence interval by using the formula ( $n=4pq/L^2$ ). The list of all schools of Guwahati city was collected and considered as the sampling frame. From the total of 18 schools, random sampling method was used to select 2 schools. Then, from each school, 200 students were randomly selected (50 students from each class of 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> standard) to get the desired sample size. It was decided to interview equal numbers of boys and girls and finally, a total of 400 students (200×2) were selected for the study.

After taking the necessary permission from the school authority, the students from each class were randomly selected using their roll numbers from class registers. All the students who fulfilled the criteria were interviewed using a predesigned and pretested semi-structured schedule and if a student was absent or unwilling to participate in the study, then the student with subsequent roll number was selected for the interview. Beforehand, each and every student was carefully briefed about the purpose of the study and consent was taken. Modified Kuppaswami socio-economic scale was used to assess their socio-economic status<sup>[7]</sup>. Approval from the institutional ethics committee was obtained. The findings of the study were tabulated and presented as percentages and Chi-square test was also applied. Few operational definitions were taken regarding tobacco use:

- Never user: respondents who has never taken any tobacco products in his/her lifetime.
- Ever user: who has taken any tobacco product during his/her lifetime, may continue to take or has given up. This is further classified as current user and ex user.
- Current user: who is currently using any tobacco product during the last 30 days.
- Ex user: who has taken any tobacco product in his/her lifetime, but has given up or not using for the last 30 days.
- Non user: includes both never user and ex user.

#### **Results:**

Table 1 shows the distribution of the respondents as per their socio-economic characteristics, where among the students 45.5% belonged to 14-15 years age group and 54.5% belonged to 16-19 years age group. Majority of them were Hindus (76.75%) and hailed from Nuclear family (93%). As per socio-economic status, most of the students fall in the Lower-middle group (39.5%). The overall prevalence of tobacco use in life time (ever user) was found to be 26.5%. The prevalence of ever user in Boys is 21.25% and in Girls it is 5.25% and this difference is statistically significant ( $\chi^2=50.943$ ,  $df=1$ ,  $p<0.05$ ). [Table 2]

Table 3 shows the different parameters related tobacco use among the current users. Among them, 77.61% reported of using 'Gutkha' products and 19.4% were smoking cigarettes. For majority of students (62.69%), the age of initiation was >15 years with mean age of 15.6 years and 32.8% of students admitted of using tobacco products daily. Table 4 shows the association of tobacco use with

different socio-demographic variables among the current users. It is found that tobacco use is significantly associated with educational standard, type of family and caste.

**Table 1: Distribution of respondents according to their socio-demographic characteristics:**

Characteristics	Boys (n=200)		Girls (n=200)		Total (n=400)	
	Number	%	Number	%	Number	%
<b>Age group</b>						
<b>14-15 years</b>	87(47.8)	43.5	95(52.2)	47.5	182	45.5
<b>16-19 years</b>	113(51.8)	56.5	105(48.2)	52.5	218	54.5
<b>Religion</b>						
<b>Hindu</b>	146(47.6)	73	161(52.4)	80.5	307	76.75
<b>Muslim</b>	54(58.1)	27	39(41.9)	19.5	93	23.25
<b>Caste</b>						
<b>General</b>	104(49.1)	52	108(50.9)	54	212	53
<b>OBC</b>	57(47.1)	28.5	64(52.9)	32	121	30.25
<b>SC</b>	27(55.1)	13.5	22(44.9)	11	49	12.25
<b>ST</b>	12(66.7)	6	6(33.3)	3	18	4.5
<b>Type of Family</b>						
<b>Nuclear</b>	180(48.4)	90	192(51.6)	96	372	93
<b>Joint</b>	20(71.4)	10	8(28.6)	4	28	7
<b>Socio-economic status</b>						
<b>Upper</b>	8(36.4)	4	14(63.6)	7	22	5.5
<b>Upper middle</b>	51(54.3)	25.5	43(45.7)	21.5	94	23.5
<b>Lower middle</b>	74(46.8)	37	84(53.2)	42	158	39.5
<b>Upper lower</b>	42(53.8)	21	36(46.2)	18	78	19.5
<b>Lower</b>	25(52.1)	12.5	23(47.9)	11.5	48	12

Note: figures in parenthesis denote row-wise percentage.

**Table 2: Distribution of respondents according to their tobacco use:**

	Boys		Girls		Total	
	Number	%	Number	%	Number	%
<b>Tobacco use of any type in life time (n=400)</b>						
<b>Yes (ever user)</b>	85(80.2)	42.5	21(19.8)	10.5	106	26.5
<b>No (never user)</b>	115(39.1)	57.5	179(60.9)	89.5	294	73.5
<b>Tobacco use of any type in last 30 days (n=106)</b>						
<b>Yes (current user)</b>	55(82.1)	64.7	12(17.9)	57.1	67	63.2
<b>No (ex user)</b>	30(76.9)	35.3	9(23.1)	42.9	39	36.8

Note: figures in parenthesis denote row-wise percentage.

**Table 3: Distribution of current users of tobacco according to their pattern of use:**

	Boys (n=55)		Girls (n=12)		Total (n=67)	
	Number	%	Number	%	Number	%
<b>Type of Tobacco use*</b>						
<b>Cigarette</b>	12(92.30)	21.82	1(7.7)	8.33	13	19.4
<b>Gutkha</b>	42(80.77)	76.36	10(19.23)	83.33	52	77.61
<b>Khaini</b>	04(100)	7.27	0(0)	0	4	5.97
<b>Jarda pan</b>	12(75)	21.82	4(25)	33.33	16	23.88
<b>Age at initiation</b>						
<b>&lt;10 years</b>	4(100)	7.27	0(0)	0	4	5.97
<b>10-15 years</b>	18(85.71)	32.73	3(14.29)	25	21	31.34
<b>&gt;15 years</b>	33(78.57)	60	9(21.43)	75	42	62.69
<b>Source of information</b>						
<b>Family members</b>	11(78.57)	20	3(21.43)	25	14	20.90
<b>Friends</b>	34(82.93)	61.82	7(17.07)	58.33	41	61.19
<b>Media</b>	10(83.33)	18.18	2(16.67)	16.67	12	17.91
<b>Frequency of Tobacco use</b>						
<b>1-2 days</b>	9(69.23)	16.36	4(30.74)	33.33	13	19.4
<b>3-6days</b>	12(85.71)	21.82	2(14.29)	16.67	14	20.9
<b>&gt;7 days</b>	15(83.33)	27.27	3(16.67)	25	18	26.87
<b>Daily</b>	19(86.36)	34.55	3(13.64)	25	22	32.83
<b>Source of availability</b>						
<b>Family members</b>	6(75)	10.91	2(25)	16.67	8	11.94
<b>Friends</b>	22(84.62)	40	4(15.38)	33.33	26	38.80
<b>Shops</b>	27(81.82)	49.09	6(18.18)	50	33	49.25
<b>Parents' tobacco use</b>						
<b>Yes</b>	47(82.46)	85.45	10(17.54)	83.33	57	85.07
<b>No</b>	8(80)	14.55	2(20)	16.67	10	14.93

\*multiple responses

Note: figures in parenthesis denote row-wise percentage.

**Table 4: Table showing association of tobacco use and various socio-demographic parameters among the current users:**

Parameters		Current User (N=67)	Non User (N=333)	p-value
Age group	14-15 years	25	157	> 0.05 ( $\chi^2 = 1.797$ , df=1)
	16-19 years	42	176	
Class standard	9 <sup>th</sup>	10	90	< 0.05 ( $\chi^2 = 7.942$ , df=3)
	10 <sup>th</sup>	14	86	
	11 <sup>th</sup>	19	81	
	12 <sup>th</sup>	24	76	
Religion	Hindu	48	259	> 0.05 ( $\chi^2 = 0.8581$ , df=1)
	Islam	19	74	
Caste	General	31	181	<0.05 ( $\chi^2 = 9.346$ , df=3)
	OBC	24	97	
	SC	5	44	
	ST	7	11	
Type of Family	Nuclear	53	319	<0.05 ( $\chi^2 = 21.375$ , df=1)
	Joint	14	14	
Socio-economic status	Upper	3	19	> 0.05 ( $\chi^2 = 2.166$ , df=4)
	Upper Middle	12	82	
	Lower Middle	27	131	
	Upper Lower	16	62	
	Lower	9	39	

**Discussion:**

In this study, it is found that the overall prevalence of tobacco use of any type (ever user) is 26.5% and the findings are similar to the study done by Sharma et al (2010)<sup>[8]</sup> and Kotwal et al (2005)<sup>[9]</sup> in New Delhi, where the prevalence were 20.9% and 21.31% respectively. The overall prevalence of current use of tobacco among 400 students is 16.75%. The results are at par with The Global Youth Tobacco Survey (GYTS) India in 2009, where it was reported that 14.6% of students were currently using any form of tobacco<sup>[5]</sup>. Muttappallymyalil et.al. (2012) in Kannur in Kerala observed that the current prevalence of tobacco to be 5.5%<sup>[10]</sup>. In a study by Sinha et al (2003) in

Assam, the prevalence of current tobacco use was 32.9%, which is higher than the findings of this study<sup>[11]</sup>.

In this region of the country, use of areca nut is a part of their customs and this habit may have influenced the students as majority of them admitted of using ‘Gutkha’ products (77.61%). Overall, the prevalence of current smokers among 400 respondents was 3.25%. In the study by Sharma et al (2010) the prevalence of current smokers was 7.1%<sup>[8]</sup>. The GYTS (2009) stated that 4.4% of the students were currently smoking cigarettes<sup>[5]</sup>. The age of initiation of tobacco use was found to be 15.6 years which is similar to 16.8 years by Mohanan et al (2014) in Karnataka<sup>[12]</sup>.

The peer influence is of great importance in the adolescent age group as it was found that among the current users, majority of students (61.19%) came to know about different tobacco products through their friends, which is similar to the study by Kapil et al (2005) in New Delhi where nearly 52% of the students were first introduced to these products by their friends<sup>[13]</sup>. It was observed that 49.25% of the students were buying tobacco products from shops/street vendors and easy accessibility to these products near the school premises have also influenced their habit. The findings are similar to the study by Mohanan et al (2014) where 55.55% of students reported of acquiring tobacco products from shops<sup>[12]</sup>. The history of tobacco use in the family has great impact upon the adolescents and in this study, it

was observed that among the current users, 85% students had their parents' history of using tobacco products. Majra and Basnet in their study in Sikkim (2008) found that around 70% had family history of use of tobacco products<sup>[14]</sup>.

#### **Conclusion:**

The high prevalence of Tobacco use among the students demands an urgent need for awareness raising campaign to increase their knowledge about health hazards of tobacco. Health education should be made a mandatory part of school curriculum and the school authority should be strict to ban the street vendors selling tobacco products near the school premises. Parents and guardians also have a definite role to play in prevention of development of such risk habits.

#### **References:**

1. Tobacco: WHO Factsheet [internet]. Switzerland. World Health Organization, 2015. [Updated 2015 Jul cited 2015 Sep 28]. Available from <http://www.who.int/mediacentre/factsheets/fs339/en/>
2. NFHS-3 Factsheets [internet]. National Family Health survey, India [cited 2015 Sept 28]. Available from <http://rchiips.org/nfhs/factsheet.shtml>
3. Sawyer SM, Afifi RA, Bearinger LH, Blakemore SJ, Dick B, Ezech AC et al. Adolescence: a foundation of future health. *Lancet* 2012; 379: 1630-40.
4. Patel DR. Smoking and children. *Indian J. Pediatr.* [internet]. 1999 Nov [cited 2015 Sep 28]; 66(6):817-24. Available from: <http://link.springer.com/10.1007/BF02723844>
5. India (Ages 13-15) Global Youth Tobacco Survey (GYTS) Factsheet. Available from <http://www.who.int/fctc/reporting/Annexoneindia.pdf>
6. Sogarwal R, Bachani D, Kumar B, Gupta S. Risk Factors of Non Communicable Diseases among Higher Secondary School Students in Selected Districts of India. *Am J Public Health Res.* 2014; 2(1): 16-20
7. Oberoi SS. Updating Income Range for Kuppuswamy's Socio-Economic Status Scale for the Year 2014. *Indian J Public Health.* 2015 Apr-Jun; 59 (2): 156-157.
8. Sharma R, Grover VL, Chaturvedi S. Tobacco use among adolescent students and the influence of role models. *Indian J Community Med* 2010;35(2) : 272-275
9. Kotwal A, Thakur R, Seth T. Correlates of tobacco-use pattern amongst adolescents in two schools of New Delhi, India. *Indian J Med Sci.* 2005;59(6):243-252.
10. Muttappallymyalil J, Divakaran B, Thomas T, Sreedharan J, Haran JC, Thanzeel M. Prevalence of tobacco use among adolescents in north Kerala, India. *Asian Pac J Cancer Prev.* 2012; 13(11): 5371-4.

11. Sinha DN, Singh PK, Thakur JS. Trend of Tobacco Use and Exposure to Secondhand Smoke among Students Aged 13-15 Years in India and Selected Countries of the South-East Asia Region. *Indian J Community Med.* 2011 Dec; 36:78-80.
12. Mohanan P, Swain S, Sanah N, Sharma V, Ghosh D. A Study on the Prevalence of Alcohol Consumption, Tobacco Use and Sexual Behaviour among Adolescents in Urban Areas of the Udupi District, Karnataka, India. *Sultan Qaboos University Med J*, 2014 Feb; 14(1): 104-112.
13. Kapil U, Goindi G, Singh V, Kaur S, Singh P. Consumption of tobacco, alcohol and betel leaf amongst school children in Delhi. *Indian J Pediatr.* 2005; 72:993.
14. Majra JP, Basnet J. Prevalence of tobacco use among the children in the age group of 13-15 years in Sikkim after 5 years of prohibitory legislation. *Indian J Community Med.* 2008 Apr; 33 (2): 124-126.