



## TOBACCO CONSUMPTION PATTERN AMONG HIGHER SECONDARY SCHOOL CHILDREN IN SOUTH-MUMBAI: A CROSS SECTIONAL STUDY.

<b>Dr. Nikhil Patil</b>	BHMS, MPH (2015-2017), Dept. of Public Health, Manipal University, Manipal.
<b>Dr. Sanjay Pattanshetty*</b>	Associate Professor, MPH Programme Coordinator, Department of Public Health, Manipal University, Manipal. *Corresponding Author
<b>Dr. Prakash Narayanan</b>	Associate Professor, Department of Public Health, Manipal University, Manipal.
<b>Dr. Kranti Rayamane</b>	Director, Community Health Department, Aga Khan Health Services, India.
<b>Dr. Prasad Rane</b>	Program Officer, Aga Khan Health Services, India.
<b>Dr. Shahid Hasan</b>	Senior Manager-NCD
<b>Dr. Lalitkumar R. Sankhe</b>	Associate Professor, Department of Community Medicine, Grant Medical College, Byculla, Mumbai.

### ABSTRACT

**Background:** Tobacco use among school children is becoming a serious problem in India. This study aims to assess the prevalence of tobacco consumption and its pattern among higher secondary school children in E ward, South Mumbai. **Methods:** The study was conducted among 960 school children from 7<sup>th</sup>-10<sup>th</sup> class in age group of 12-17 years during December-June 2016-17, using Multi stage and Probability proportional sampling method. Descriptive analysis and associations between variables of interest were assessed using multivariable logistic regression models. **Results:** The prevalence of consumption of tobacco in any form was observed to be 26.7%, smoking tobacco and smokeless tobacco use was 8.7% & 23.8% respectively. There was a positive association between any form of tobacco consumption with Gender, father's occupation and father's education. ( $p < 0.002$ ) **Conclusions:** Study concluded that the prevalence of tobacco use among School children was high, compared to the GYTS in Maharashtra as well as India.

**KEYWORDS :** Tobacco, Schools, Prevalence.

### INTRODUCTION:

Tobacco use is a major but preventable cause of premature death and disease. It causes over five million deaths each year worldwide which is expected to raise over eight million deaths by 2030. (Jindal et al., 2004). Smoking and smokeless are the most common forms of tobacco use. Smoking form includes cigars, cigarette, beedi, etc. The smokeless forms include use of raw tobacco and processed tobacco such as gutka, pan-masala, etc. (Rami et al., 2003).

Tobacco use among school children is becoming a serious problem in developing countries including India. Nearly 8-9 lakh people die every year in India due to diseases related to tobacco use. (4) As a result of stringent tobacco control initiatives in developed countries, the tobacco industry has shifted its base to the developing countries like India. India is the world's second largest consumer and third largest producer of tobacco. (Azad, 2016)

Global Adults Tobacco Survey (GYTS) India revealed that more than one-third (35 percent) of adults in India use tobacco in some form or the other. Among them 21 percent adults use only smokeless tobacco, 9 percent only smoke and 5 percent smoke as well as use smokeless tobacco.

The most susceptible period for tobacco uses in India is during adolescence and early adulthood (15-24 years). According to the Global Youth Tobacco Survey (GYTS) in Maharashtra, 12.9 percent adolescents (13-15 years) are currently consuming tobacco products. (Narayan et al., 2011)

In Maharashtra, as per the WHO STEPs guideline, the smokers were categorized into three categories; current smokers, current daily smokers, and past daily smokers

besides, those who have never smoked in lifetime were classified as non-smokers. While eliciting the information on smoking it was observed that 16 percent of males in Maharashtra (14 percent in urban and 18 percent in rural) were current smokers. (It has been reported in integrated disease surveillance project (IDSP) Non-Communicable Disease Risk Factors Survey, Maharashtra. 2007-08).

### OBJECTIVES:

To access the prevalence and find out the pattern of tobacco use among school children of in the age group of 12 to 17 years

### MATERIALS AND METHODS

A Cross sectional study was conducted during December-June 2016-17 among school going children in the age group of 12 to 17 years to assess the prevalence of tobacco use and its pattern of consumption. The sample size of 960 was calculated using a formula for estimation of proportion by relative precision considering 10% of response rate with 95% CI and 15% relative precision, and 16.2% prevalence of tobacco use (Singh et al., 2016). The inclusion criteria of school going children were participants with Age > 12 years up to 17 years. Participation in the study was voluntary and written assent was taken from the parents of participants.

A complete list of all high schools in E ward was obtained from the department of education and sports, Mumbai in which schools are stratified into Government, Private Aided and Private unaided schools. Multi stage sampling technique was employed for data collection. A school survey conducted using stratified sampling technique in total 31 Aided schools including 20 Government schools and 11 Private high schools. In the second stage, the sample size in each school was assigned using PPS (probability proportionate to size) and classes were selected using simple random sampling method.

In the third stage, required numbers of students were selected randomly from the class. 960 Interviews were done with interviewer who has administered questionnaire in English and its translated version in Marathi and Hindi. Assent forms were given two days prior to the students to get permission from the parent/ guardian. After 1 or 2 days, later assent forms were collected before starting data collection and at the time of filling questionnaire.

Data was collected using a self-administered, pre-tested, semi-structured questionnaire which was developed based on literature review to assess the prevalence of tobacco use. Questionnaire was distributed to the students by Researcher with the help of teachers. The students were briefed about the purpose of the study. Teachers and Researcher were informed to take care that no discussion happens amongst the participants to avoid bias. Ethical clearance for the study was obtained from the Institutional Ethics Committee, Kasturba Medical College (Manipal University) Manipal, and Institutional Ethics Committee, Prince Aly Khan Hospital, Mumbai. Data was analyzed using a statistical software SPSS version 16.0. Simple descriptive analysis with subgroup analysis was used to explore the socio-demographic details, prevalence of tobacco and its pattern of use. Univariate analysis using Logistic regression was done to assess the association between the socio demographic of the students and tobacco use in any form, unadjusted Odds ratio (OR) with 95 percent CI and P value were calculated. P-value <0.05 were considered statistically significant.

**RESULTS**

A total of 960 students participated in study among them, the average age of participants was 13.87 ± 1.3 years. In total, 57.5 percent of participants are males, 37.6 percent of participants were studying in 9<sup>th</sup> class. More than fifty percent of participants were from Private schools 53.4 percent and 46.6 percent participants from government schools. Nearly 32.7 percent participant's father's education was secondary and 44.2 percent of participant's fathers were self-employed. Living arrangement of participants with their both parents were 84.9 percent. (Table 1)

**Table no. 1 Distribution of respondents and their socio-demographic details (N= 960)**

Variable	Mean	SD
Age in completed years	13.87	1.306
	Category	Frequency (%)
Gender	Male	552 (57.5%)
	Female	408 (42.5%)
Religion	Hindu	348 (36.3%)
	Muslim	510 (53.1%)
	Christian	10 (1.0%)
	Buddhism	92 (9.6%)
School type	Government	447 (46.6%)
	Private	513 (53.4%)
School Std. grade	7th	239 (24.9%)
	8th	291 (30.3%)
	9th	361 (37.6%)
	10th	69 (7.2%)
fathers education	Illiterate	201 (20.9%)
	Literate but no formal education	94 (9.8%)
	Primary	186 (19.4%)
	Secondary	314 (32.7%)
	Higher	165 (17.2%)
fathers occupation	Government employee	133 (13.9%)
	Nongovernment employee	198 (20.6%)
	Self-employed	426 (44.4%)

	Student	8 (0.8%)
	Homemaker	83 (8.6%)
	Retired	18 (1.9%)
	Unemployed, able to work	17 (1.8%)
	Unemployed, unable to work	7 (0.7%)
	Don't know	70 (7.3%)
Living arrangement	With Both parents	815 (84.9%)
	With Mother only	54 (5.6%)
	With Father only	36 (3.8%)
	With Relatives	38 (4.0%)
	In Hostel	3 (0.3%)
	In Rented house	14 (1.5%)

The study showed that the prevalence of ever user of tobacco in any form among participants was observed to be 26.7 percent, about 8.6 percent of participants had habit of smoking tobacco, and 23.8 percent of participants had the habit of using smokeless tobacco. The distribution of type of smoking tobacco use, Smoking tobacco from hookah was 72.3 percent and 15.7percent participants used piped filled with tobacco. Cigar/cheroot, manufactured cigarette use was 1.2 percent and 6.0 percent respectively. The distribution of type of smokeless tobacco, in total 54.82 percent of participants used Beetle nut with tobacco, followed by Pan Masala and Gutka 15.78 percent and 14.47 percent respectively. (Table 2) 2.2 percent and 1.4 percent participants are curious to start tobacco consumption in smoking form and smokeless form respectively. Tobacco consumption in any form is more (44.4 percent) among boys and belongs to government schools than girls. 94 percent participants were aware that tobacco consumption is harmful. Though participants had knowledge of tobacco consumption being harmful, still they consumed tobacco.

**Table 2 Distribution of respondent and their current consumption of tobacco (n=960)**

Variable	Yes %	No %
Smoking tobacco	83 (8.6%)	877 (91.4%)
Smokeless tobacco	228 (23.8%)	732 (76.3%)
Tobacco in any form	256 (26.7%)	704 (73.3%)

It showed that there was a significant association of ever tobacco user and independent factors such as Age in completed years, gender, religion, father's education, father's occupation and living arrangement. Respondent in the age in completed years of 17 had 0.29 times odds of using tobacco consumption than the age group of 12. (p= <0.002; CI (0.13, 0.65)), Males had 1.83 times higher the odds of tobacco consumption than females with a (p<0.001; CI (1.35, 2.47)). The respondent who were studying in 8<sup>th</sup> and 9<sup>th</sup> standard had 2.32 and 2.55 times odds respectively (p< 0.001) of using tobacco in any form than those who were studying in 7<sup>th</sup> standard. Parental education of respondents was literate but no formal education and Primary found to have a 0.31 and 0.44 times odds (p<0.001) of tobacco use in any form than the ones who respondents whose parents had higher level of education. As compared to children of Government employees, children of Homemakers had 0.31 times odds of using tobacco use in any form (p<0.001; CI (0.17, 0.53.)) Living arrangement of respondents with father only found 0.41 times odds (p<0.001; CI (0.21, 0.82)) of tobacco use in any form than the respondents who were living arrangement with both parents.

**Regression analysis for the association between socio-demographic profile and ever use of tobacco (N=960)**

Variable	Category	Use of tobacco	Unadjusted Odds ratio (95% CI)	P Value
Socio-Demographic	Category	Ever use 256 (row %)	Never user 704 (row %)	

Age in completed years	12 years	44 (32.6%)	91 (67.4%)		---
	13 years	52 (21.1%)	195(78.9 %)	1.81(1.13, 2.90)	0.014
	14 years	70 (21.9%)	250(78.1 %)	1.72(1.10, 2.70)	0.017
	15 years	44 (28.8%)	109(71.2 %)	1.19(0.72, 1.97)	0.481
	16 years	25 (35.2%)	46(64.8%)	0.89(0.48, 1.63)	0.705
	17 years	21 (61.8%)	13(38.2%)	0.29 (0.13, 0.65)	0.002
Gender	Male	174 (31%)	378(68.5 %)	1.83 (1.35, 2.47)	0.001
	Female	82 (20.1%)	326(79.9 %)		---
Religion	Hindu	62 (17.8%)	286(82.2 %)		---
	Muslim	173 (33.9%)	337(66.1 %)	0.42 (0.30, 0.58)	0.001
	Christian	2 (20.0%)	8 (80.0%)	0.86 (0.18, 4.18)	0.859
	Buddhism	19 (20.7%)	73 (79.3%)	0.83 (0.46, 1.48)	0.533
School Std. grade (class)	7 <sup>th</sup>	90 (37.7%)	149 (62.3%)		---
	8 <sup>th</sup>	60 (20.6%)	231 (79.4%)	2.32 (1.58, 3.42)	0.001
	9 <sup>th</sup>	69 (19.1%)	292 (80.9%)	2.55 (1.76, 3.70)	0.001
	10 <sup>th</sup>	37 (53.6%)	32 (46.4%)	0.52 (0.30, 0.89)	0.019
Fathers Education	Illiterate	55 (27.4%)	146 (72.6%)	0.61 (0.37, 1.01)	0.059
	Literate but No formal education	39 (42.4%)	53 (57.6%)	0.31 (0.17, 0.56)	0.001
	Primary	63 (34.4%)	120 (65.6%)	0.44 (0.27, 0.72)	0.001
	Secondary	63 (20.3%)	248 (79.7%)	0.91 (0.56, 1.48)	0.725
	Higher	31 (18.9%)	133 (81.1%)		---
Fathers Occupation	Govt. Employee	24 (18.0%)	109 (82.0%)		---
	Non Govt. Employee	44 (22.8%)	149 (77.2%)	0.72 (0.41, 1.26)	0.258
	Self - Employed	114 (27%)	310 (73.1%)	0.60 (0.36, 0.98)	0.043
	Student	2(25%)	6(75.0%)	0.66 (0.12, 3.47)	0.624
	Homemaker	34 (41.0%)	49(59.0%)	0.31 (0.17, 0.59)	0.001
	Retired	4(22.2%)	14(77.8%)	0.77 (0.23, 2.54)	0.669
	Unemployed able to work	4(23.5%)	13(76.5%)	0.71 (0.21, 2.38)	0.586
	Unemployed unable to work	1(14.3%)	6(85.7%)	1.32 (0.15, 11.48)	0.801
	Don't know	27 (38.6%)	43 (61.4%)	0.35 (0.18, 0.67)	0.002

Living arrangement	With Both parents	204 (25.%)	610 (74.9%)		---
	With Mother only	20 (40.0%)	30 (60.0%)	0.56 (0.32, 1.00)	0.053
	With Father only	15 (42.9%)	20 (57.1%)	0.41 (0.21, 0.82)	0.011
	With Relatives	10 (26.3%)	28 (73.7%)	0.93 (0.44, 1.95)	0.858
	In Hostel	1(33.3%)	2(66.7%)	0.66 (0.06, 7.40)	0.742
	In Rented House	5(35.7%)	9(64.3%)	0.60 (0.19, 1.81)	0.366

**CONCLUSION**

This study provides information about the prevalence of tobacco use and its pattern of consumption among higher secondary school going children in E ward, south Mumbai. This study included 11 private schools and 20 government schools. The results show that the tobacco consumption among higher secondary school going children was high. The use of smokeless tobacco higher than the use of smoking tobacco products among higher secondary school going children. In smokeless tobacco, Beetle nut with tobacco and in smoking, smoking tobacco from Hookah is very high among school going children. Most of the children mean age 13.87 years. Smokeless tobacco use was highest in the age range of 14 years. Tobacco consumption is higher in the Muslims. Due to the large difference in number of Muslim versus other religion in this study it is however difficult to generalize this result. Large number of students from Private schools, and rest of from Government schools. Participants parental education who were higher level their children found to more use of tobacco in any form than those who parental education was illiterate. There is significant association between, age in completed years, Religion, School grade, Parental education, and Parental occupation with tobacco use in any form. Various independent factors were associated with use of tobacco (smoking, smokeless or both). Awareness programs should be implemented in the all schools in E ward, south Mumbai. Educate the children about the health risks associated with tobacco consumption. This might play an important part in prevention of tobacco associated health problems among this target population. In addition, Implementation of COTPA act in school premises and surrounding area, raised taxes on tobacco, multipronged approaches should be undertaken for the cessation of use of tobacco among school going children.

**Acknowledgment**

Principal Investigator of this study acknowledge his heartfelt thanks and gratitude to Manipal University, Manipal and Aga Khan Health Services, India for the absolute support to the thesis. I acknowledge my heartfelt thanks and deep sense of gratitude to Dr. Sanjay Oak, CEO of Prince Aly Khan Hospital, Mumbai for the absolute support to the thesis. Last but not the least I must acknowledge all the Schools authority and all the participants of his study for their time and cooperation during the data collection.

**REFERENCES**

- Jindal S, Aggarwal A, Gupta D, Kashyap S, Chaudhary D. Prevalence of tobacco use among school going youth in North Indian States. Indian journal of chest diseases and allied sciences. 2005;47(3):161.
- Rani M, Bonu S, Jha P, Nguyen S, Jamjoom L. Tobacco use in India: prevalence and predictors of smoking and chewing in a national cross-sectional household survey. Tobacco control. 2003;12(4)
- Azad GN. First Global Adult Tobacco Survey New Delhi, India: Ministry of Health & Family Welfare, Govt. of India. 2010. [Accessed December 2016]
- Narayan DD, Dhondibarao GR, Ghanshyam KC. Prevalence of tobacco consumption among the adolescents of the tribal areas in Maharashtra. Journal of Clinical and Diagnostic Research. 2011;5(5):1060-3.
- Integrated disease surveillance project (IDSP). Non-Communicable Disease Risk Factors Survey, Maharashtra, 2007-08. National Institute of Medical Statistics and Division of Non-Communicable Diseases, Indian Council of

- Medical Research, New Delhi, India.[[www.icmr.nic.in/final/IDSP-NCD-Reports/Summary.pdf](http://www.icmr.nic.in/final/IDSP-NCD-Reports/Summary.pdf)][Accessed on November 2016]
- 6 Singh D, Sharma S, Rai A, and Rai Arti. 'A Cross Sectional Study to Determine the Prevalence of Tobacco Consumption among School Going Adolescent Boys in Rural Area of Maharashtra'. *Indian journal of applied research* Volume: 6 (7July2016) ISSN-2249-555X|IF:3.919|ICValue:74.50
  - 7 Singh V, Pal HR, Mehta M, Dwivedi S, Kapil U. Pattern of tobacco use among school children in National Capital Territory (NCT). *The Indian Journal of Pediatrics*. 2007;74(11):1013-20.
  - 8 Sinha DN, Gutpa PC, Pednekar MS. Tobacco use among students in the eight North-Eastern states of India. *Indian J Cancer* 2003; 40:43-59.
  - 9 Pradhan PMS, Niraula SR, Ghimire A, Singh SB, Pokharel PK. Tobacco use and associated factors among adolescent students in Dharan, Eastern Nepal: a cross-sectional questionnaire survey. *BMJ open*. 2013;3(2)