

# A substantive review on tobacco use among school-going adolescents in India

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## Abstract

Tobacco use among the adolescents in india is believed to be on an increase. Therefore, a systematic review was carried out to summarize these studies. Several electronic databases were searched, supplemented by screening reference lists, smoking-related websites, and contacting experts. Selection, extraction, and quality assessments were carried out by one or two independent reviewers. The focus was on studies conducted on the school-going children in india and discussed in a global perspective. A narrative review was carried out. Many of the studies lacked sufficient power to estimate precise risks associated with the study subjects, as it mainly involved questionnaire studies. Studies were often designed to investigate tobacco use, but many had major methodological limitations including poor control and imprecise measurements of exposure. Studies in india showed a high risk of major health-related illness and several forms of cancers such as oro-pharyngeal cancers associated with the chewing form of tobacco. Studies from other regions and of other cancer types were not consistent. Tobacco use is increasing among the adolescents and has become an persistent issue that is usually carried over to their adulthood. In india, there is a stringent need for awareness creating oral health education programs in the school and college premises.

**Key words:** *Substantive Review, tobacco use, School-going adolescent*

## INTRODUCTION

Tobacco use is one of the leading preventable causes of morbidity and mortality in the world.<sup>[1,2]</sup> Worldwide, tragically the tobacco epidemic kills 5.4 million people a year from various tobacco-related diseases. Tobacco use usually starts in adolescence and continues into adult life, meaning that many future victims tobacco use are today's children. Adolescents and young adults of colleges are often targeted by the tobacco industry for marketing.<sup>[3]</sup> Research has shown that teen tobacco

users are more likely to use alcohol and illegal drugs than are non-users. The risks of tobacco use are highest among those who start early and continue its use for a long period.<sup>[4,5]</sup> The early age of initiation underscores the urgent need to intervene and protect this vulnerable group from falling prey to this addiction.<sup>[6]</sup> The most common reasons cited for children to start using tobacco are peer pressure, parental tobacco habits, and pocket money given to them.<sup>[6]</sup> Presently, adolescents are increasingly exposed to changing lifestyles that have a negative impact on health.<sup>[7]</sup>

In developed countries, public awareness of the health hazards of tobacco use has led to increased regulation of the tobacco industry, resulting in restrictions on the advertising and availability of cigarettes and higher prices for them. As a result, tobacco companies are aggressively seeking new markets in the developing world.<sup>[3-5]</sup> These markets are quite attractive because in most developing countries, there is little legislation

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against the marketing and distribution of tobacco products and smoking is still socially acceptable.<sup>[8]</sup>

According to the World Health Organization, adolescents are widely considered to be prone to recklessness and risk-taking behaviours, which can lead to substance abuse, car accidents, unsafe sex, and andjuvenile delinquency. There is some evidence that this risk-taking is biologically driven, caused by the social and emotional part of the brain (amygdala) developing faster than the cognitive-control part of the brain (frontal cortex). Although most adolescents are psychologically healthy, they can (like adults) exhibit signs of established habits due to its acquaintance in the early adolescence. This review has been carried out in an attempt to quantify the major and key findings of various surveys conducted in the Indian school set up. Significant numbers of new studies have been published since the major reviews of the mid-1980s and early 1990s, and trends of tobacco use have changed. Many literature reviews have been published, mostly confined to various substance abuse, alcohol use, or drug use. Hence, this review has been undertaken to concentrate on this special group of population who can carve out a niche in their future in terms of healthy lifestyle habits.

## MATERIALS AND METHODS

### Conceptual approach

The objectives of the review were to:

1. Identify and describe various epidemiological studies on tobacco use encompassing the school children
2. Provide narrative and tabular summaries of key concepts and findings
3. Interpret results including the potential impact on the population and discuss in global perspective

### Data management

At least two reviewers had abstract data and independently summarised what they consider to be the most important results from each study. These summaries were compared by the three reviewers and any differences of opinion would be resolved by discussion and consultation with the original study. Any further calculations on study data considered necessary were conducted by the lead reviewer and checked by another reviewer.

### Criteria for considering studies for review

### Types of studies

Epidemiological studies were reviewed, provided that they included the surveys conducted on the school-going adolescent tobacco users, focused mainly on the Indian studies. Included studies are listed in the appropriate tables emphasising various key findings of these special groups.

### Flow chart of the search strategy

#### Appendix 1

### Search strategy for identification of the studies

A comprehensive and substantial search strategy was developed, which included electronic databases, websites, and contact with experts. A small number of non-English language studies were also identified but were not included. Relevant studies were identified by searching several electronic databases from inception. Databases searched include PubMed, Medline, Google Scholar, and Dissertation Abstracts. Both key words and MeSH headings were used. Websites (World Health Organization, Action on Smoking and Health-UK, Action on Smoking and Health-US, National Institutes of Health, Centers for Disease Control and Prevention) were also searched using the key term “Tobacco use and school-going adolescents”. The search strategy for study types was adapted from previous reviews. The strategy was piloted in Medline and cross-checked against

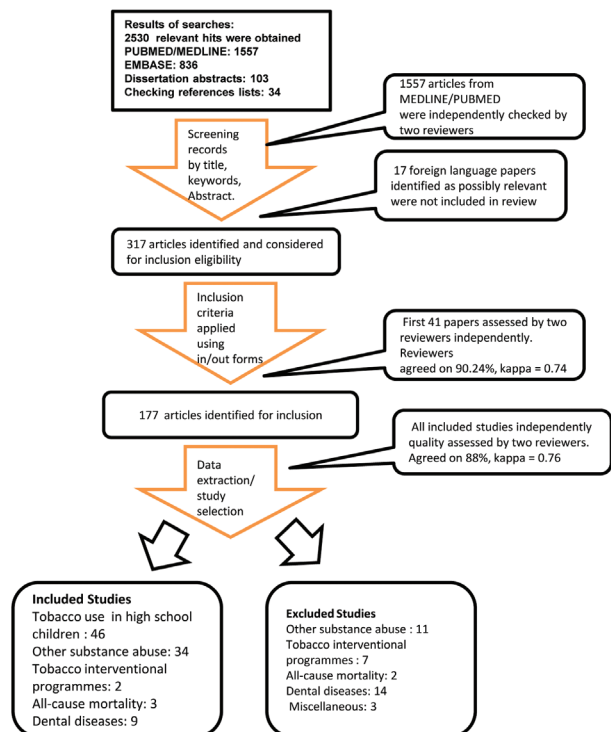


Chart 1: Article selection flow chart

**Table 1: Tobacco use among school-going adolescents****Key findings from various indian studies**

Author	Region	Current any tobacco users (%)		Current smoking (%)		Current tobacco chewers (%)	
		Boys	Girls	Boys	Girls	Boys	Girls
Gururaj <i>et al.</i> <sup>[2]</sup>	Karnataka	4.9	2.29	3.1			
Raj Narain <i>et al.</i> <sup>[6]</sup>	Noida,	11.2	8.8	4.6			
Dongre <i>et al.</i> <sup>[7]</sup>	Rural wardha,	68.3	12.4	--	--	--	--
Vinita Singh <i>et al.</i> <sup>[12]</sup>	Delhi	4.6	0.8	1.5	0.8	--	--
V Singh <i>et al.</i> <sup>[16]</sup>	Jaipur	2.1	1.7	--	--	--	--
Nitin Joseph <i>et al.</i> <sup>[44]</sup>	South India	--	--	--	--	27.3	6.1

several possible terms.

## RESULTS

The significant result summaries for each study included in the review are presented in Table 1. The Table was prepared considering various important studies done by Indian researchers from different specialities. Within these subsections, the studies are listed accordingly.

A Study conducted by Gururaj *et al.*<sup>[2]</sup> showed point prevalence of tobacco use among 13-15 year olds as 4.9%. One-third of current tobacco users (30.8%) purchased tobacco product in a store and one-fifth used it at home. Nearly half of the never smokers (43%-56.7%) were exposed to tobacco smoke outside home and 83% favored a ban on smoking in public places. Only one-third (31.6%) reported that the reasons of tobacco usage among youth was discussed in formal school settings. A study conducted by Raj Narain *et al.*<sup>[6]</sup> at Noida, India, in 2011 showed that any kind of tobacco use was found in 537 (11.2%) students, 419 (8.8%) were 'ever smokers (including current smokers)', 219 (4.6%) were 'ever tobacco chewers (including current chewers)', 179 (3.7%) were 'exclusive smokers', and 118 (2.5%) were 'exclusive tobacco chewers'. The mean age of initiation of these habits was around 12.4 year, mainly from private school students as compared to government school students ( $P < 0.05$ ).

A community-based research, triangulation of qualitative (free list, focus group discussions) and quantitative methods study by Deshmukh *et al.*<sup>[7]</sup> at rural Wardha, India, revealed that about 68.3% boys and 12.4% girls had consumed any tobacco products in last 30 days. Among the main forms of tobacco, 79.2% consumed *kharr* and 46.4% consumed *gutka*. According to respondents, few adolescent boys taste tobacco by

8-10 years of age, while girls do it by 12-13 years. A study conducted by Awasti *et al.*<sup>[11]</sup> at Nainital, India, can be statistically summarized as (logistic regression analysis) that students belonging to grade 10 [adjusted odds ratio (OR) = 4.3; 95% class interval (CI): 2-9] and grade nine (adjusted OR = 2.2; 95% CI: 1.3-3) were more likely to use tobacco as compared to grade eight students. Students whose friends used tobacco were more likely to use than those whose friends were non-users (adjusted OR = 3.4; 95% CI: 1.7-6.7). Kapil *et al.*<sup>[12]</sup> at Delhi in 2007 showed that about 9.8% of the study children had at least once experimented with any form of tobacco in their lifetime. The proportion of children who were "current users" of tobacco products was 5.4% (boys: 4.6%, Girls: 0.8%).

## DISCUSSION

In India, 36.9% of children initiate smoking before the age of 10 years. Almost 4.2% of students currently smoked cigarettes, with the rate for boys significantly higher than girls, while 11.9 % of students currently used other tobacco products. Cigarette smoking among youth is high in the central, southern, and north-eastern regions of India. Exposure to second hand smoke (SHS) in public places is also high.

Tobacco use is a major worldwide contributor to deaths from chronic diseases, and the specific findings from the Global Youth Tobacco Survey (GYTS) suggest that current dire warnings of a doubling of the death toll could be a conservative estimate, and the true toll from tobacco use could be even greater than this amount. Small differences in the patterns of tobacco use between boys and girls, high use of tobacco products other than cigarettes, high susceptibility to smoking among never-smokers, and widespread exposure to SHS suggest even more morbid future outcomes caused by tobacco use.

Data obtained from various researches between

1999 and 2005 suggest that the effect of tobacco use on worldwide deaths could be even greater than expected.<sup>[8-16]</sup> The findings of this report and previous research<sup>[10,14,17]</sup> show that the difference in current cigarette smoking between boys and girls is smaller than the difference between men and women. Furthermore, use of other tobacco products by students is as high as, or higher than, cigarette smoking in all regions of the world, except the Americas and European region, in comparison with India.

Different methods are available for projecting the future burden of chronic diseases. No method is perfect, but prediction of the burden of disease caused by tobacco use can be improved by validating the data available. Previous projections on sex difference in cigarette smoking and other tobacco use have changed. Results of previous studies have shown that men are four times more likely than women to smoke.<sup>[17]</sup> By contrast, GYTS data have shown that boys aged 13-15 years were only 2-3 times more likely to smoke than girls, and in many countries, there are no differences by sex in cigarette smoking and other tobacco use.<sup>[10]</sup> No evidence is available to suggest that the difference in adults by sex is a result of higher cessation rates for women than men.<sup>[18]</sup> If the similarity in smoking rates by sex persists as these students age into adulthood, this shift in behavior compared with older groups will have important implications for the global burden of chronic diseases and should be considered in future mortality projections.

Our findings in this review are subject to at least three limitations. First, these data apply only to young people aged 13-15 years who attended school, and therefore, they cannot be extrapolated to all children in this age group. Then there are children who are not in schools. However, in most countries, most young people in this age attend regular, private, or technical schools.<sup>[19]</sup>

Second, these data apply only to children who participated in the survey on the day the surveys were administered in schools. School response rates have been high throughout the GYTS and other surveys, and only 21 survey sites have recorded student response rates less than 80%. Third, the findings are based on self-reports from students who might under-report or over-report their behavior.<sup>[20]</sup>

### Future challenges and issues

Further studies with sufficient power and adequate control of confounding are required to elucidate the

tobacco use. Studies would benefit from improved validation, trend information, and consideration of individual calibration and training. A difficulty in many countries has been to obtain sufficient numbers of adolescent tobacco users to enable precise estimates of risk. Populations with high tobacco use (such as interior rural areas) need to be identified and followed over time. One possibility to set up a multicenter case-control study/cohort studies with centers in different regions, India, and other parts of the world. Long-term follow-up of populations of smokers and other forms of tobacco users who either quit tobacco use or become smokeless tobacco users should be established to compare the differences in a range of health outcomes between these two groups. Only further well-designed epidemiological studies with adequate sample sizes will be able to resolve these controversies.

### Future Issues to Concentrate on

- Bans and restrictions on smoking
- Community education to reduce exposure to environmental tobacco smoke at home
- Increasing the unit price for tobacco products
- Mass media campaigns
- Strategies appropriate for healthcare systems and providers
- Multicomponent interventions that include patient telephone support

### How can schools help?

Schools teach values and the benefits of learning. It is a place where a child grows up in all aspects. This is where several lifestyle habits are inculcated. With this set up, can this basement be utilised for the betterment of adolescents?

Tobacco use prevention education has a place along with other important subjects taught in the school environment.

The values and benefits of tobacco-free school environment include the following; (1) Providing positive role modelling by adult employees and visitors; (2) Reducing children's observation of tobacco use and taking a firm stand against it; (3) Supporting existing prevention messages delivered in classrooms by sending clear, consistent non-use messages; (4) Providing safe environments for students by reducing exposure to SHS; (5) Protecting children from a product that is habit forming/addictive; (6) Complying with government legislation prohibiting smoking inside school buildings; (7) Protecting against contradicting

government law on smoking in public places; (8) Preparing students for the reality of smoke-free workplaces and communities; (9) Protecting schools from unnecessary risk of future liability by prohibiting smoking on school premises; (10) Including young people in planning, implementation, and enforcement of the policy will likely enable realizing compliance.

## CONCLUSION

Tobacco use is shockingly on the rise among school adolescents and has become an obstinate issue that is usually carried over to their adulthood. This demands an urgent check and behavioural interventions at several environment with which they encounter such as home, school, and public places. Although several government policies are made in India, these need to be made stringent in schools and colleges.

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