

# ADOLESCENT TOBACCO USE ESTIMATES FROM THE GLOBAL YOUTH TOBACCO SURVEY, INDIA: TOBACCO A RISK FACTOR FOR FUTURE SPREAD OF COVID 19

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## ABSTRACT

### BACKGROUND:

Tobacco use has been identified as a risk factor and causes negative outcomes to the COVID 19 pandemic. Adolescents' tobacco users in India are the vulnerable population to acquire COVID-19 in the future. The study aimed to understand tobacco consumption patterns among adolescents in India to highlight the vulnerability of this population to COVID-19 infection.

### METHODS:

The Global Youth Tobacco Survey (GYTS) reports were identified and recovered from the Centre for Disease Control and Prevention (CDC) data sets. The findings of the surveys in 2003, 2006, and 2009 were compared with respect to the prevalence of cigarette smoking and other tobacco use, and the determinants of initiation of tobacco use among the adolescent population.

### RESULTS:

The total tobacco consumption among adolescents was found to have increased from 13.7% in 2006 to 14.6% in 2009. All forms of tobacco use were higher in boys than girls across all three survey periods. Also, the trend of bidi (smoked tobacco form) use had increased in both genders. A reduction in exposure to Secondhand Smoke, with an increase in cessation services, media campaigns, and tobacco-related school curriculum was noted. If the increase in tobacco consumption between 2006 and 2009 had continued at the same rate, then in 2021 around 18% of adolescents are estimated to consume tobacco in some form.

### CONCLUSION:

The significant overall tobacco use and increasing bidi consumption makes the adolescent group more susceptible to COVID-19 infection. This indicates an imperative need to include this age group for COVID-19 management to reduce the burden on health care.

### KEYWORDS

Adolescent, Tobacco use, COVID-19, Health systems, India

## INTRODUCTION

Coronavirus disease 2019 (COVID-19), has spread around the world and caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). [1] The virus primarily affects the lung epithelial cells and causes viral pneumonia and acute respiratory distress syndrome. [2] The scientific community is constantly estimating the clinical characteristics of the disease and the prognostic factors. Tobacco has been identified to be associated with the negative progression, a positive diagnosis, high hospitalization rates, and exacerbated health outcomes of COVID-19. [3] [1] [4]

Tobacco has an established impact on lung function and reduces the immune efficiency of the body, that in turn, makes the users prone to respiratory infections such as COVID-19. [5] The use of tobacco products causes a high chance of transmission of the COVID-19 virus. This is because of, contaminated fingers, constant touching of the face and mouth while use, sharing of the products, social gathering for smoking in closed environments, and spitting of the smokeless tobacco form. [6,7] COVID-19 related mortality and morbidity are severe with higher rate among those with comorbidities such as non-communicable diseases (NCDs) including hypertension, diabetes, and chronic obstructive pulmonary disease COPD. [6] There is significant evidence stating the role of tobacco as a risk factor in the causation of the NCDs. [8] In addition a meta-analysis had reported a strong relationship between the history of smoking and severe COVID-19 cases with higher odds among smokers than the non-smokers. [9]

The recent COVID-19 data in India indicates that the second wave of the pandemic is taking a toll on the younger age groups. The national statistics state, among the current COVID-19 patients about 8.14% are in the age group of 11-20 years and 22% are in the 20 to 40 years of age group. [10] Visualising the younger generation scum to the pandemic, primary risk factors need to be identified and addressed. India is the second-largest consumer of tobacco in the world and the consumption patterns among adolescents are alarming. [11] The youth in India have reported initiating tobacco consumption at an early age of 15 years, resulting in a habit formation by the time they are adults. [12] Also, the youth, who are the current tobacco users, will constitute the adult tobacco consumers

in the future. They will constitute the vulnerable population for the NCDs and be prone to COVID-19 infections as well.

The health and economic burden related to tobacco globally is a known fact and now the mortality due to COVID-19 has increased resulting in an additional burden on the health systems of the countries. [13] The low and middle-income countries (LMIC) have already been struggling under the burden of tobacco-related illness and death and are now unable to cope with the difficult COVID-19 circumstances. Given the burden, countries like India are facing challenges in rendering health care services with workforce shortages, absenteeism, poor infrastructure and quality of care, and inefficient health systems. [14] To address the substantial projection of the COVID-19 burden due to the extensive tobacco use in India, the country needs to identify the risk groups and adopt appropriate strategies.

With the link between tobacco use and the spread of COVID-19, it is essential to comprehend the consumption patterns and factors associated with tobacco use among the adolescent age group. This will provide a strong insight on how to integrate the present tobacco control policies into COVID-19 programmes. With this background, the present study aimed to understand the tobacco consumption patterns among adolescents in India to highlight the vulnerability of this population to COVID-19 infection. With this aim, we have studied and compared the trends and patterns of tobacco consumption and related factors among adolescents, using the Global Youth Tobacco Survey, India.

## METHODS

The study used nationally representative data on youth in India collected through the Global Youth Tobacco Surveys. In the view of systematic monitoring and surveillance of tobacco use among youth, the Global Youth Tobacco Survey (GYTS) is carried out under the Global Tobacco Surveillance System (GTSS). [15] The GYTS in India has been conducted in 2003, 2006, and 2009 wherein the students of grades 8, 9 and 10 were surveyed. The survey collected data on the prevalence of tobacco use (smoking and smokeless) among the school students. It also recorded information about factors that influence adolescents to initiate tobacco consumption. [16]

The GYTS survey reports of 2003, [16] 2006 [17] and 2009 [18] were identified and recovered from the Centre for Disease Control and Prevention (CDC) data sets. Therefore, no ethical review was required for the study. The survey findings were compared with respect to the prevalence of cigarette smoking and other tobacco use and the determinants of tobacco initiation and use among adolescents. The determinants of tobacco use were exposure to secondhand smoke (SHS), cessation of cigarette smoking, media and advertising, access and availability of cigarettes, and tobacco-related school curriculum.

## RESULTS

The survey findings, which could significantly aid future recommendations to reduce the susceptibility of this young population to COVID- 19 were identified and reported.

### TOBACCO PREVALENCE TRENDS AMONG ADOLESCENTS:

The total tobacco consumption among adolescents was found to be 16.9% in 2003, 13.7% in 2006, and 14.6% in 2009

(Table1). Overall, both forms of tobacco were found to be consumed by the adolescent age group. Although the total (Table1) and gender-wise smokeless form consumption had declined over the years it was consumed at a higher rate than the smoking form. Boys consumed both smoking and smokeless form more than girls across all three survey periods. The reports revealed the following gender-wise distribution; (1) Smokeless form: 2003 (B-18.0%, G-7.9%), 2006 (B- 10.7%, G- 7.5%), and 2009 (B- 11.1%, G- 6.0%), and (2) Smoking form : 2003 (B-10.5%, G- 4.2%), 2006 (B-9.4%, G- 3.6%), and 2009 (B-11.2%, G-3.7%). Also, the comparisons among the smoking form revealed that both cigarette smoking from 2003 (B-5.7%, G-1.8%) to 2009 (B 5.8%, G-2.4%) and bidi (smoked tobacco form made by rolling a dried, rectangular piece of temburni leaf (*Diospyros melanoxylon*) with 0.150.25 g of sun-dried, flaked tobacco into a conical shape and securing the roll with a thread [19]) consumption from 2003 (B- 2.9%, G-1.1%) to 2009 (B- 7.3%, G-2.2%) had increased. Furthermore, in 2009, the last survey there were at least 15.5% of non-smokers, who had reported to start smoking by the end of next year.

TABLE 1: TOBACCO PREVALENCE AMONG ADOLESCENTS

TOBACCO FORM	2003 (%)	2006 (%)	2009 (%)
Total current tobacco use	16.9	13.7	14.6
Smoking form	8.1	7.0	8.1
Smokeless form use	14.0	9.4	9.0

### DETERMINANTS OF TOBACCO USE AMONG ADOLESCENTS:

#### Exposure to secondhand smoke

Overall (Table 2) the exposure to secondhand smoke (SHS) at home and in public places had reduced for both genders [20] [21] from 2003 to 2009. Furthermore, the number of people who thought smoking in public places should be banned and smoke from others was harmful was significant, with a minor decline in percentages as follows, 2003 (74.8%), 2006(74.0%), and 2009(63.3%).

#### Cessation of cigarette smoking

Although, two-thirds of the students reported that they wanted to stop smoking immediately, the proportion was highest in 2006 (70.3%) than in 2009 (66%). The help utilized for smoking cessation including both the boy and girls had significantly increased in 2009 since 2003 (Table 2). Consistent use of cessation services utilization had also resulted in 67.2% of the adolescent who tried to stop smoking in 2009. Also, 2009 (19.5%) had the highest increase in the percentage of ever smokers, who had received help or advice to quit smoking from various means, such as program, professionals, family members or friends.

**TABLE 2: DETERMINANTS OF TOBACCO USE AMONG ADOLESCENTS**

DETERMINANTS	2003 (%)	2006 (%)	2009 (%)
Exposure to secondhand smoke at home	36.2	26.6	21.9
Exposure to second-hand smoke in public places	48.8	40.3	36.6
Cessation services used	84.6	81.8	94.3
Media and advertising- view anti-smoking messages	NA	74.0	77.5
Access and availability of cigarettes- who bought cigarette in a store	64.8	51.9	47.0
Tobacco-related school curriculum- dangers of tobacco	52.3	54.4	63.3

### Media and Advertising

The exposure to anti-smoking media messages in the past 30 days also had consistently increased since 2003 with the highest in 2009 (Table 2). Furthermore, the exposure to pro-cigarette advertisements on billboards had also increased in 2009 (74.4%) since 2003 (42.1%). The numbers indicate a progressively growing issue of tobacco marketing for this age group.

### Access and availability of cigarettes

Overall, the current users buying cigarettes in a store had significantly decreased from 2003 to 2009 (Table 2). Also, there was a consistency in the percentage of students offered free cigarettes between 2003 (8.1%) and 2009 (8.1%). Furthermore, the percentage of students who purchased cigarettes in a store without being refused had seen a decline with 55.3%, 72.1%, and 56.2% in 2003, 2006, and 2009 respectively.

### Tobacco-related school curriculum

The inclusion of dangers of smoking in the school curriculum had substantially increased over the years. (Table 2) The school curriculum had predominately included information related to the dangers of tobacco, reasons for smoking, and effects of tobacco use. The discussion about reasons why young people smoke had remained consistent over the survey years, but the discussion on the effects of tobacco in the class was highest in 2009 (55.9%) in comparison to the previous years.

## DISCUSSION AND CONCLUSION

The comparison of the GYTS reports indicates that total tobacco consumption has increased by 6.57% in 2009

compared to 2006. Identifying the lack of any recent national representative survey on adolescent since 2009, if the increase in tobacco consumption between 2006 and 2009 had continued at the same rate then in 2021 around 18% of adolescents are estimated to consume tobacco in some form. Also, an additional 15.5% of never smokers who reported in 2009 the likeliness to initiate smoking from the next year might significantly add to the current tobacco users in this population. The secondary analysis of the GYTS survey of the Indian adolescent age group predominately points to prevalent tobacco use among the adolescent population. Extrapolating the findings from literature and the current COVID -19 age-wise distribution, tobacco use in this age group should be attention seeking for future coronavirus disease burden.

The high use of smoking and smokeless form of tobacco in this population and its association with the modes of spread of the COVID- 19 virus brings the health system to a 'worrysome' state. The transmission, mortality, and morbidity rates will be expected to rise drastically due to the increased susceptibility of these current young tobacco users in the future. The increased use of bidi in this population indicates the high use in the low socio-economic population who are unaware of the risks related to tobacco and COVID-19 infection, and with limited health care services around them will add to the enormous health burden to the country.

Currently, the COVID management strategies are targeted towards the older adults with complete lack of attention towards this population. The study emphasizes including this young population in the regimen of care for future planning of COVID 19 management. Furthermore, integration of the tobacco control policies into COVID-19 strategies is

required. India already has a widespread National Tobacco Control Programme based on the WHO- FCTC and the MPOWER policies which includes Monitoring tobacco use and prevention policies, Protecting people from tobacco smoke, Offering help to quit tobacco use, Warning about the dangers of tobacco, Enforcing bans on tobacco advertising, promotion and sponsorship, Raising taxes on tobacco..[22] Incorporating the comprehensive tobacco control program in the COVID 19 management, will aid in reduction of new COVID-19 infections and promote the younger generation to quit tobacco at an early stage.

The GYTS reports the effective tobacco control policies existing among this population in India. The reduction to SHS reported in the surveys is a sign wherein, the best use of tobacco control measures is seen. [23] The messages related to the harm of SHS can further consist of information about how SHS not only cause tobacco-related diseases among second-hand smokers but also makes them prone to COVID-19. The age group knowing the importance of banning smoking in public places can be exploited to also inform them of the risk of transmission of COVID-19 in public places and increase the following of social distancing, and avoidance of mass gatherings, and places used for tobacco-related activities like the smoking rooms, restaurants and bars.

The increased use of cessation services and the attempts to quit in this age groups denotes the need for sound tobacco cessation services to be in place. The tobacco cessation services can include information about the COVID-19 and tobacco as a risk factor and the negative outcomes due to it can be elaborated in the behavioural counselling.[6] The most effective tobacco control measure is the anti-tobacco mass media campaigns [24] with wide coverage in India. The adolescents reported in the GYTS demonstrated the increased viewing of such campaigns. Therefore, future mass media campaigns could include information related to COVID-19 and the risk of tobacco use, negative outcomes and burden of the disease due to tobacco, and stories of COVID-19 patients who had consumed tobacco.

The access to tobacco products among this population is the key reason for them to initiate the habit. Therefore, the strict enforcement of no tobacco policies in schools [25] along with information on use of tobacco as a risk factor to COVID-19 can be incorporated. This in turn will help to curb the initiation of the habit thereby reducing the

future prevalence among this population. Under the national tobacco control programme, the promising inclusion of tobacco-related information in the school curriculum [25] is another mode that can be further exploited to include COVID-19 related information. The risk of tobacco consumers being prone to coronavirus infection and the preventive factors related to it can encourage the younger generation to have safe and good health practices.

The present study prominently denotes the need to include the younger generation in COVID-19 prevention and management strategies to reduce the future burden of the disease. The study also directs the need to carry out the national representative survey GYTS among the adolescent to have a better picture of the current tobacco use and now to include COVID 19 questions to the standard GYTS tools. This would aid in the incorporation of tobacco control measure in the coronavirus disease protocols. The cumulative advantage of including the tobacco control methods in the modalities for COVID 19 will be a rewarding strategy to improve and strengthen the health care system of the country.

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