

Environmental Factors Influencing Tobacco Usage among High School Children in Lucknow City: A Cross-sectional Study

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Abstract

Background: Evidence proves that the majority of adult tobacco users begin using tobacco as children or teens. Teenagers are drawn to tobacco products for a variety of reasons. Public health planners are gravely concerned about the current rapid trade and tobacco use among teenagers in a developing nation like India.

Objective: The present paper focuses on the prevalence of tobacco use among children in the eighth to tenth grades and the various environmental factors that contribute to tobacco use among children.

Material and Methods: Following ethical clearance, six government schools in Lucknow were chosen for this cross-sectional study, and data was gathered using the Global Youth Tobacco Survey (GYTS) to examine the relationship between tobacco use in children and other independent influencing factors. Logistic regression analysis was used.

Results: 21.7% of the children used tobacco in some or the other way. Supari with tobacco was the most popular tobacco product consumed by children (48.3%). Statistical analysis showed that family members consuming tobacco at home and adults sending their kid to get tobacco had a high connection with tobacco use among children. The direct relationship between children watching individuals consuming tobacco on television and their arousal of interest for the same was also seen. Similarly, the presence of tobacco vendors outside the school and easy availability of tobacco products to children significantly influenced the tobacco consumption habit.

Conclusion: Tobacco users in families, adults sending children to buy tobacco, children's arousal of interest on seeing people using tobacco on media, tobacco vendors outside the school, and the easy availability of tobacco products have all been proven to be environmental triggering factors for tobacco consumption amongst high school students.

Keywords: Adolescent, Child, Tobacco, Cross-Sectional Studies, Prevalence, Developing Countries, Logistic Models, Students, Television, Habits, Government, Arousal.

INTRODUCTION

India is among the highest tobacco industry consumers, consisting of adults consuming tobacco in different forms like cigarettes, pan masala, supari, bidi etc. According to Global Adult Tobacco Survey 2016-17 (GATS-2) there are 28.6% tobacco users aged 15 years or older in India, with Uttar Pradesh accounting for 35.5%.^[1] This vast consumption of tobacco products is not limited to adults. An increasing number of children are also imbibing this habit. The fourth round of the Global Youth Tobacco Survey (GYTS 4) completed in 2019 concluded that in India, 8.5% of tobacco

users aged between 13 to 15 years and 22 them were from Uttar Pradesh.^[2]

The average age of commencement of tobacco use in Indian research ranged from 8 to 15 years.^[3] In addition, much of this population of children mostly hail, where parental awareness and monitoring are lacking. Children's immediate

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environment is the most crucial factor in adopting a habit.^[4] The influence of their parents, teachers, peers, media, and film can be a great contributor to developing tobacco use habits.^[4] Another factor that could be equally additive to the development of this habit is the ease of accessibility of tobacco products. Young children who have the facility of availability of tobacco-containing products are prone to use them.^[5]

India has a plethora of (local vendors) pan shops where these products are accessible to children without any legal constraints.^[6] It has been observed that teens who smoke one to two cigarettes per day exhibit signs of addiction comparable to adults.^[7] Henceforth, it is important to identify the factors contributing to the growth of young tobacco users so that authorities can introduce corrective measures to control their influence.

This study was designed to assess tobacco use among students in 13 to 15 years of school children and to identify environmental influencing variables that contribute to tobacco use among teenage to to devise methods to safeguard the children.

Operational definition- Environmental factors are variables in an individual's personal surroundings that influence his or her behavior directly or indirectly. In this study, tobacco use by family members/peers/teachers/TV actors and the availability of tobacco products are considered environmental factors influencing tobacco usage in children.

MATERIAL AND METHODS

After receiving ethical approval from the institute, a cross-sectional study was done at Government schools in Lucknow.

Inclusion Criteria

- Schools where the principals gave consent for participation.
- Students in 8th, 9th and 10th grades of Government High Schools in Lucknow.
- Students who were physically and mentally fit to understand and fill the questionnaire by themselves.

Exclusion Criteria

- Students who did not give a written assent signed by their parents for participation.
- Students who were absent on the day of visit.
- Incompletely filled survey forms.

Study Design

There are 51 Government High schools in the Lucknow district according to the list provided by Basic Shiksha Adhikari (BSA). A multistage sample was used to choose schools for our study. At stage 1, we divided the city into 5 zones: North, South, East, West and Central. 10 schools were selected from each site. In the 2nd stage, 1 school was randomly picked from each zone. In stage 3, systematic random sampling was used to select 180 students from selected schools in each zone. The school which was selected in south zone had less number of students in school. Therefore, an additional school was selected in this zone, thus accounting to a total of 6 schools.

Though the calculated sample size was 770 by the statistician, we included a greater number of students for good precision, less errors, less bias due to expected attrition. A total of 1000 students participated in the study and 836 of them submitted completely filled survey and consent forms. Students were asked to complete a form with 16 questions derived from the Global Youth Tobacco Survey (GYTS) relevant to our study. The questions were chosen based on their capacity to identify the prevalence of tobacco use in children and environmental factors influencing tobacco use behaviors. The students who participated were given a printed copy of the questionnaire. If there was any question/s about the questionnaire, the investigator was physically there to answer them. Completed forms were collected and analyzed.

Statistical Analysis

To examine the relationship between tobacco use in children and other independent influencing factors gathered from the questionnaire instrument, Logistic regression analysis was used, using the SPSS program version 20 with Odds Ratio at a 95% confidence interval. At P value 0.05, all statistical analyses were considered significant.

RESULTS

A total of 836 students were surveyed, of them male participants included a majority of 58%, whereas female's 42% (Figure 1). The mean age of the participants was 14(±1.3) years. The age of initiation of tobacco use amongst tobacco users was 12 or 13 years (61.4%) in this study (Figure 2).

Table 1 describes the responses of the students to the GYTS questions. The table highlights an important finding: more than 50% of the students had family members at home who consumed tobacco and 36.5% of children had gone to buy tobacco products for them. 21.7% of the participants consumed tobacco in some form. There is the highest number of positive reactions (95.1%), for seeing people consuming tobacco in public places, followed by watching people using tobacco on TV, in videos or in movies (79.4%). Only 49.9% of students got refusal to buy tobacco product because of their age. The least number of participants (26.2%) agreed to use tobacco if their best friend offered it. A sizable portion of participants (69.3%) corresponded to the presence of tobacco vendor outside the school.

Table 2 demonstrates different type of tobacco used by tobacco users. We can perceive from the table that amongst the tobacco users, the most frequent type of tobacco product consumed by the students was Supari with tobacco (48.3%) followed by pan masala (27.0%) and that by the family members of the students was Pan Masala (34.5%).

Table 3 highlights the tobacco-related habits in non-tobacco users. Here we can observe that amongst the non-tobacco users, 20.3% of the students and 9.2% of the family members of the study participants consumed supari without tobacco.

Table 1: Children’s response to the Global Youth Tobacco Survey questionnaire

S.No	Question	Answers	
		Yes- N (%)	No- N (%)
1	Family member consuming tobacco at home.	457 (54.7)	379 (45.3)
2	Adult at home sending child to buy tobacco product.	305 (36.5)	531 (63.5)
3	Consumed tobacco.	181 (21.7)	655 (78.3)
4	Received any advice on not using tobacco.	636(76.1)	200 (23.9)
5	Witness people consuming tobacco at public places (playgrounds, parks, sidewalks etc).	795 (95.1)	41 (4.9)
6	Faced refusal on buying tobacco product because of age ,in last 30 days.	417 (49.9)	419 (50.1)
7	Heard anti-tobacco media messages on television, radio, internet, billboards, posters, newspapers, magazines, or movies, in last 30 days.	700 (83.7)	136 (16.3)
8	Seen a person ill due to tobacco usage.	525 (62.8)	311 (37.2)
9	Watched people using tobacco on TV, in videos, or in movies, in last 30 days.	664 (79.4)	172 (20.6)
10	Watching tobacco usage on TV, in videos, or in movies is attractive.	289 (34.6)	547 (65.4)
11	Will use tobacco if best friends offers it.	219 (26.2)	617 (73.8)
12	Presence of tobacco vendor outside school.	582 (69.6)	254 (30.4)
13	Seen someone consuming tobacco in school, in last 30 days.	271 (32.4)	565(67.6)

Table 4 Illustrates significant results of logistic regression analysis to determine the association of exposure to tobacco use at home and public places, lack of awareness among students about the harmful effects of SHS, the influence of media, peers and access and accessibility to tobacco products as independent variables to tobacco use in children. It was significant that tobacco users at home and adults sending their child to buy tobacco had a strong association with tobacco use among children, with a *p-value* of 0.00. In addition, lack

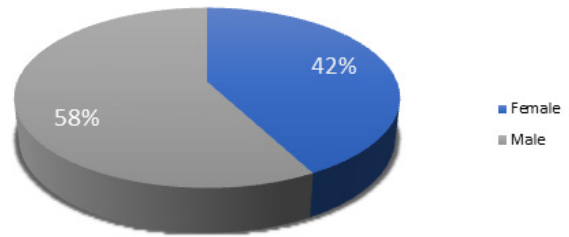


Figure 1: Percentage of male and female in the study population

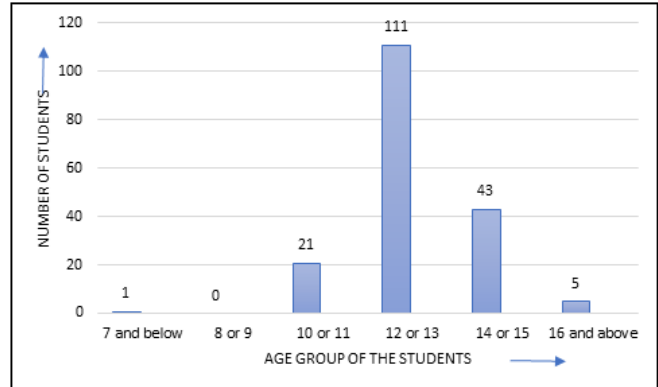


Figure 2: Age of initiation of tobacco use in school children

of knowledge on the harmful effects of second-hand smoke also indicated to have implication, with an odd ratio of 1.76 and a *p-value* of 0.01. The direct association of children’s attraction to watching people using tobacco on TV, in videos, or in movies is a trigger factor for tobacco use with a *p-value* of 0.01. Likewise, tobacco vendors outside the school (*p-value* 0.00) and availability to buy tobacco products despite age restriction (*p-value* 0.01) substantially contribute to tobacco usage habit.

DISCUSSION

Tobacco usage affects the human body from head to toe, lowering a person’s health-related quality of life. With the improvement and accessibility of items to future generations, the use of tobacco among teenagers has grown in popularity in recent years. Children begin using tobacco for a variety of reasons without considering the long-term effects of this harmful habit on their life. As a result, we performed this study to determine the environmental variables influencing tobacco use in school children so that we may devise methods to rescue the youth.

Table 2: Different types of tobacco used by tobacco users

Tobacco user	Type of habit							Total tobacco users
	Bidi N(%)	Cigarette N(%)	Gutkha N(%)	Pan Masala N(%)	Supari/Areca nut with tobacco N(%)	Others N(%)	Any two or more habits mentioned besides N(%)	
Student	11 (6.0)	21 (11.6)	10 (5.5)	49 (27.0)	87 (48.3)	3 (1.6)	0	181
Family member	57 (12.4)	46 (10.0)	87 (19.8)	158 (34.5)	49 (10.7)	20 (4.3)	40 (8.3)	457

Table 3: Habits related to tobacco use in Non-tobacco users

Non-Tobacco user	Type of habit		Total Non-tobacco users
	Supari/Areca nut without tobacco N(%)	No habit related to tobacco N(%)	
Student	133(20.3)	522 (79.7)	655
Family member	35(9.2)	344 (90.8)	379

In our study we discovered that 21.7% of the participants consume tobacco, whereas Verma A *et al.* reported 16.4% of school children with tobacco habit in Delhi.^[9] The age of initiation of tobacco use in children of 8th to 10th grades was 12 or 13 years in our study. This inference was comparable to the findings of Narain Raj *et al.*, who determined that the average age for tobacco use start was 12.4 years.^[3] However, Verma A *et al.* reported a lower age in her study: 9.5 ± 1.13 years for the smoking type and 9.25 ± 1.16 years for the smokeless form.^[8] From this early age of initiation of tobacco use we can achieve the situation that tobacco products are easily available to children despite of legal age restriction to buy/sell tobacco. This was one of the factors impacting tobacco use in children in our study, and it demonstrates non-compliance with section 6(a) of the COTPA 2003. In Delhi, Kumar S and Ali I *et al.* documented the selling of tobacco goods to minors.^[10,11] Sharma P and Kalaskar R too mentioned in their research that easy accessibility of tobacco products is the major factor responsible for children to adopt this harmful habit in rural areas.^[5]

Our data also suggested that tobacco vendors outside schools were a factor in school-age children's tobacco use. A youngster spends around 6 hours every day at school, away from his or her family and personal supervision. The presence of sellers outside of schools provides students with easy access to tobacco goods, increasing their chances of developing a tobacco habit. Furthermore, seeing the alluring hued packaging of these items every day on the way to and from school may motivate buying and trying these products. This demonstrates a lack of compliance with Section 6(b) of the COTPA in Lucknow, which prohibits the sale of tobacco products within 100 yards, giving an opportunity to children to buy tobacco products. Verma AR *et al.* reported tobacco vendors selling tobacco products to children and 45% of children consuming tobacco products publicly.^[12]

In our research, adults using tobacco products at home and sending children to purchase tobacco were also extremely important variables influencing tobacco use in teenagers. A child's behavior and habits are influenced by the environment in which he or she is raised. And adults are frequently unaware of the greater ramifications of their actions, which can have a negative impact on their children. By consuming and sending their children to buy tobacco goods, parents are implicitly teaching their children that tobacco use is an acceptable family custom. M. Voulo and his colleagues discovered a clear link between parental and child smoking behaviors.^[13] Dwivedi S also determined that tobacco use is passed down through generations.^[14] Similarly, Park H K observed that parental smoking, decreased parental supervision, and relaxed parental attitudes toward adolescent smokers were related to adolescent tobacco usage.^[15] Liang YC mentioned smoker parents and friends as well as Second-hand exposure at home, schools and outside of the home and schools are the key environmental factors influencing 12 to 18 years school children to use tobacco in Taiwan.^[16]

We also noticed that amongst the tobacco users, the most frequent type of tobacco product consumed by the family members of the students was Pan Masala (34.5%) and in students, it was Supari with tobacco (48.3%). Kumari R also discovered that smokeless tobacco products were the most popular among Bihar's 8 to 9 grade students, with 17.7% of them consuming betel nut.^[17] Another important finding in our study discloses the fact that 20% of student non-tobacco users consumed areca nut without tobacco. Children prefer chewable tobacco products because they have candy like appearance and flavoring agents.^[18] Gupte HA reported use of areca nut only by 7-8 grade students which act as a precursor for tobacco use.^[19]

More than half of the students had seen performers enjoying tobacco, areca nut, or alcohol on TV, movies, or videos, as well as in cigarette advertising or promotions. Such visual displays on television or social media increase the youth's attraction to try tobacco products, and our study revealed this to be one of the key components in influencing them to use tobacco in children. Sarget *et al.* also said that viewing smoking in movies is one element contributing to teenage tobacco usage.^[20] Singh S *et al.* discovered that peer pressure was the main reason to tobacco use in 13-15

Table 4: Logistic regression analysis with tobacco use in children as a dependent variable.

S.No	Independent variables	B	S.E	P	OR (95% CI)
1	Tobacco user at home.	1.18	0.23	0.00 *	3.27 (2.07, 5.15)
2	Elders send child to buy tobacco product.	1.00	0.20	0.00 *	2.73 (1.82, 4.05)
3	Availability to buy tobacco product.	0.28	0.20	0.01*	1.32 (1.08, 1.53)
4	Attraction to use tobacco by watching people using tobacco on TV, in videos, or in movies.	0.62	0.25	0.01*	1.86 (1.14, 3.04)
5	Tobacco vendor outside the school.	0.97	0.25	0.00 *	2.63 (1.60, 4.33)
6	Lack of knowledge on the harmful effects of second-hand smoke	0.56	0.22	0.01*	1.76 (1.12, 2.75)

Note: A p-value less than 0.05 is significant.

years school children and television was the main source of information for tobacco products.^[21] Jafari A *et al.* reported a negative impact of media on female adolescents to smoking.^[22]

CONCLUSION

Teenagers go through significant physical and emotional changes throughout this stage of life, and they are more prone to get confused and develop bad habits if they are not provided proper supervision at this age. Our investigation discovered that 21.7% of 8th to 10th grade school children used tobacco. And parental influence, easy access to tobacco products, availability to buy tobacco product near school, and witnessing people use tobacco products on television were the key environmental variables that promoted tobacco use in youngsters.

RECOMMENDATIONS

There is an urgent need to educate and inspire the kids to live a tobacco-free life, which may be accomplished by regular school programs, TV serials, and inserting chapters on tobacco and its detrimental consequences in literature, among other things. In today's society, social media greatly impacts adolescents; this strong weapon should be used to publicize a tobacco-free lifestyle and raise awareness about the tobacco-related illness burden in our country. Moreover, policymakers should emphasize the rigorous application of COTPA rules to prevent minors from purchasing tobacco products and selling of tobacco outside schools.

Limitations of study

We would like to point up a few limitations of our research. As this study's results depend on the student's willingness to declare their tobacco usage in the survey, students who did not completely fill out the survey forms raise concerns about their unwillingness to share the truth. Besides that, we were only able to gather data from students who were present on the day of our visit. Furthermore, we only looked at schools in the city; further study in rural regions is needed.

Ethical approval

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CONFLICT OF INTEREST

Nil

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