

# Prevalence of Tobacco use Among the Students in Professional and Non-Professional Colleges of Mathura City

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## ABSTRACT

**Introduction:** Tobacco in general is used as smoking and smokeless tobacco forms. These tobacco products are the global public health hazard for the health in general and oral health in particular.

**Aim:** To find the prevalence of tobacco use among the professional and non-professional college students of Mathura city.

**Material and Methods:** A cross sectional study carried out in Mathura city to assess the prevalence of tobacco use among the college students in the age group of 15 to 30 years (N= 1478). Students were grouped as professional (N= 500) and non professional (N= 978). Structured pretested proforma was used to assess the prevalence of tobacco use. The data obtained was subjected to statistical analysis using Chi-Square test, ANOVA and PostHoc Tukey test ( $p \leq 0.05$ ).

**Results:** The subjects found to consume tobacco were 40%, whereas 60% were non-users.

**Conclusion:** It was concluded that tobacco use was higher among males as compared to females. The college years are a crucial period in the development or abandonment of adverse habits like tobacco use. Tobacco use in this group should be monitored closely, and young adults should be included in all tobacco control efforts.

**Keywords:** Professional, Non Professional, College Students, Oral Health, Mathura

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## INTRODUCTION

Tobacco appears to be as old as human civilization. Today, tobacco is cultivated commercially in more than 120 countries and is consumed in almost all countries of the world. China is the world's leading producer of tobacco followed by India, Indonesia, Brazil and United States (1).

Tobacco in general is used as smoking and smokeless tobacco forms. Tobacco smoking is usually done in the form of cigarettes, cigars and pipe tobacco. Over 1.3 billion adults are current smokers of cigarettes worldwide. The total global prevalence in smoking is 29% (47.5% of men and 10.3% of women over 15 years of age smoke). Of the 1.3 billion smokers, more than 900 million live in developing countries (2). Smokeless tobacco (ST), the other

popular form of tobacco, is available as snuff and chewing tobacco. The use of the snuff is limited to Scandinavian and European countries and the use of chewing tobacco is widely prevalent in the South East Asia Region. The global youth tobacco survey revealed high (10-20%) prevalence of smokeless tobacco use among young students (13-15 year) in Southeast Asia. Among disadvantaged youth group high (45%-71%) prevalence of tobacco use was reported in Southeast Asia (3).

In India the beedis are the most popular smoking form. About 19% of tobacco consumption in India is in the form of cigarettes, while 53% is smoked as beedis. The rest is used mainly in smokeless form. In the country as a whole 7-8 times more beedis are sold than cigarette. Cigarette smoking is the

second most popular smoking form of tobacco used in India after beedis. The other regional forms of the smoking tobacco include cheroots, chuttas, dhumti, hookahs and chillums (4). In India it is documented that smokeless tobacco use is found among more than one-third (38.1%) of the men and around one-tenth (9.9%) of the women. [5] In prevalence surveys in eight rural areas of India, smokeless tobacco use was 3–53% among men and 3–49% among women. Also, in these areas 2–26% of men and 0–4% of women practised both smoking and smokeless tobacco habits (5).

In the recent epidemiological studies it has been found that the use of tobacco has been more prevalent in the younger age groups particularly the adolescents. As per WHO estimates, approximately 80% of adult tobacco users initiate its use before 18 years of age. Nearly 25% of all young smokers start by the age of 10 years, when they are far too young to understand or resist social expectations. Approximately 55,000 adolescent start using tobacco everyday in India, joining 7.7 million young people under the age of 15 who already regularly use tobacco (6).

In Mathura district of the Uttar Pradesh, the widespread availability of tobacco along with the socio cultural branches has resulted in the widespread use of these products by the youth population of the region. Since, no study has been conducted in this part of the country to study the prevalence of tobacco use among the young adolescents. Hence an attempt was made to assess and compare the prevalence of tobacco use among professional and non-professional college students of Mathura city.

## MATERIALS AND METHODS

A cross sectional study was carried out in Mathura city to assess the prevalence of tobacco use among professional and non-professional college students in the age group of 15 to 30 years.

## SOURCE OF DATA

Data was collected through college based survey which included a self administered questionnaire. The validity of the questionnaire was checked by doing a pilot study. The data of pilot study was not included in the main study and necessary modifications were made.

## STUDY POPULATION

The cross sectional study included the college students of both Professional and Non Professional colleges of Mathura city.

## SAMPLE SIZE ESTIMATION

- Out of 21 colleges only 15 were in the running stage. Eleven co-educational colleges were selected for the study, out of which 5 were professional colleges and 6 were non professionals.
- Sample size was determined by the formula based on the study population

$$n = \frac{4pqN}{E^2(N-1) + 4pq}$$

- The estimated sample size for the study based on the prevalence of the tobacco and alcohol use was calculated to be 1350. Keeping in mind the non-response rate in each college more no: of subjects were examined than the sample size estimated resulting in total of 1478 subjects examined in the study.

## SAMPLING PROCEDURE

A sample of 1478 students of professional and non-professional colleges was selected on the basis of multistage random sampling. The subjects were selected from the professional and non-professional colleges of Mathura city using the proportional probability in the month of July 2012 to September 2012. The study subjects were selected on the basis of following inclusion and exclusion criteria:

## INCLUSION CRITERION

- Subjects present on the day of survey and willing to participate.

- Subjects who gave verbal consent.

## EXCLUSION CRITERION

- Subjects not willing to participate in the study
- Subjects suffering from any systemic illness.
- **ETHICAL CLEARANCE:** The research protocol was reviewed and approved by the ethical committee of K.D. Dental College and Hospital, Mathura and district education officer of Mathura prior to the start of the study.
- **OBTAINING APPROVAL FROM COLLEGE AUTHORITIES:** Permission for carrying out the survey in the colleges was obtained from the college authorities of the respective colleges.
- **INFORMED CONSENT:** Before the data collection and clinical examination, the purpose and the methodology of the study was explained to each and every subject and verbal informed consent was obtained.
- **RECORDING CLERK:** The examiner was accompanied by a recording clerk who was also a dentist and well versed with the questions in the questionnaire.
- **DATA COLLECTION:** The data recorded from the questionnaire included General information, Personal information regarding oral hygiene practices including means and frequency of cleaning teeth and Information regarding tobacco use, duration of use, form of tobacco used frequency of usage of tobacco. All the participants were classified into users or non users of tobacco. Tobacco Users were those subjects who had used tobacco in any form even once in their life time. They were further categorized as smokeless or smoked tobacco users and are those consuming the tobacco on regular basis or occasionally.

## STATISTICAL ANALYSIS

The data was entered into MS Office Excel sheet and then subjected to analy-

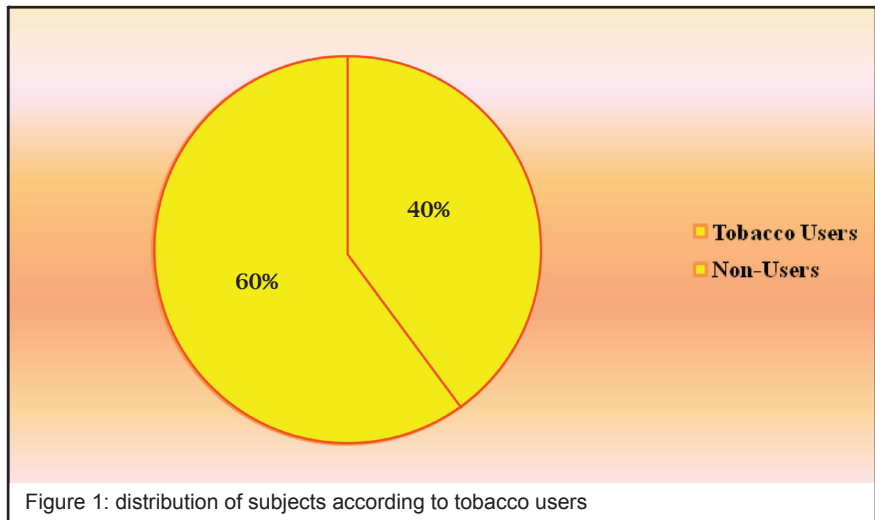


Figure 1: distribution of subjects according to tobacco users

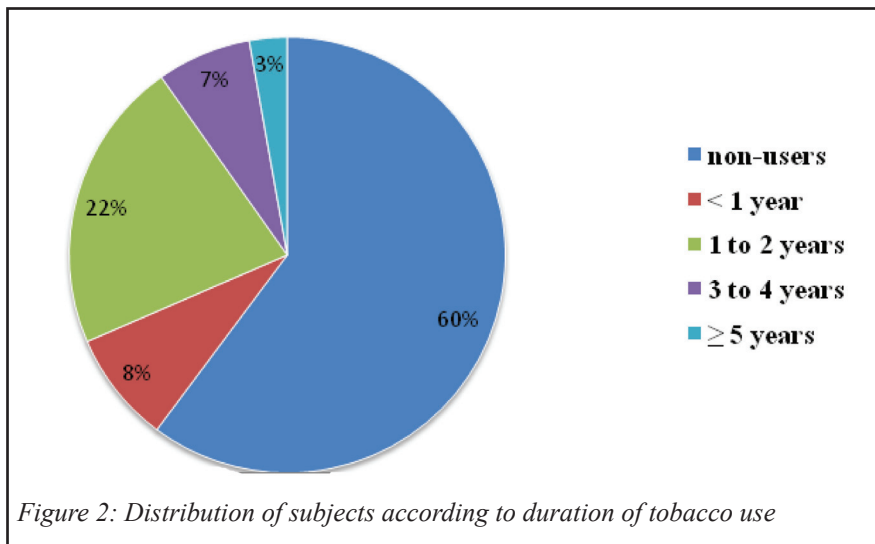


Figure 2: Distribution of subjects according to duration of tobacco use

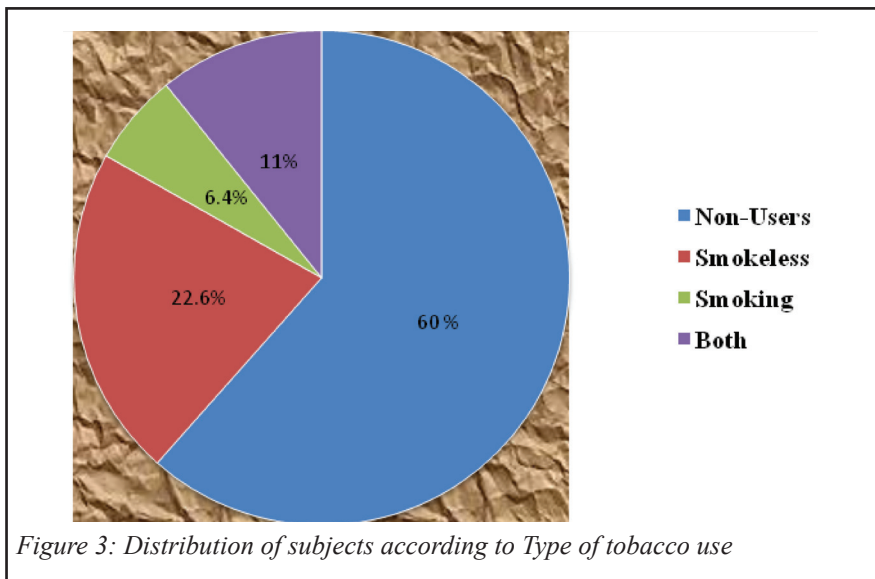


Figure 3: Distribution of subjects according to Type of tobacco use

sis using SPSS software (version 17.0). The data was analysed and presented as tables and graphs. In order to compare the various factors, cross tables were prepared for selected parameters and appropriate statistical tests were applied with CI 95%. Chi-Square Test and ANOVA test were applied.

**RESULTS**

**Distribution of Subjects According to Gender**

Fourteen hundred and seventy eight subjects were selected from the professional and non professional colleges of Mathura city out of which 434 (29.4%) were females and 1044 (70.6%) were males.

**Distribution of Subjects According to Type and Level of Qualification**

The subjects included in the study belonged to professional and non-professional colleges of Mathura city. Five hundred subjects (33.8%) were of professional colleges and 978 (66.2%) subjects were of non-professional colleges. The subjects were further categorised as undergraduates 1282 (86.7%) and postgraduates 196 (13.3%) respectively.

**Distribution of Subjects According to Duration, Type and Frequency of Tobacco Use**

Out of the total study population of 1478, 40% were found to be tobacco users and 60% were non-users (Figure 1). As per the duration of tobacco use, 22% of the subjects were consuming tobacco for 1 to 2 years, 8% were consuming tobacco for less than a year, 7% were consuming for 3 to 4 years and 3% for 5 or more years (Figure 2).

Smokeless / Chewing tobacco is the more commonly consumed form (22.6%) as compared to the smoking form of tobacco (6.4%) and 11% of the subjects were found to consume both smokeless and smoking form of tobacco (Figure 3).

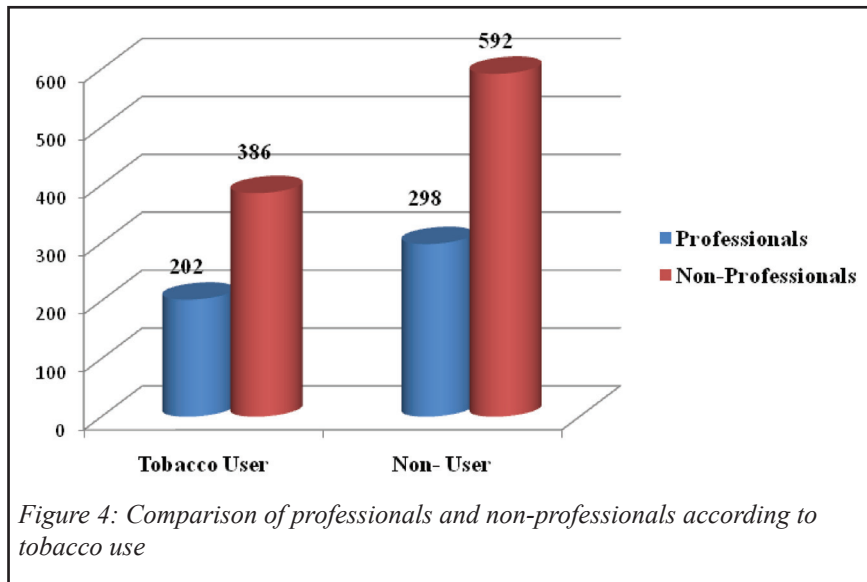


Figure 4: Comparison of professionals and non-professionals according to tobacco use

Among the smokeless form of tobacco most of the subjects were found to consume Gutkha (17%) followed by pan masala (4%) and 1% were found to consume khaini.

In the smoking form subjects mostly consumed cigarette (6%). Among the smokers maximum were those who smoked 1-3 times a day (3%), others included occasional smokers (1%) and those who smoked 4-6 times a day (2%). In chewing form of tobacco most of the tobacco user were those consuming 1 to 2 packets of tobacco in a day (14%) followed by those consuming tobacco occasionally (5%), 3-4 packets in a day (2%) and 5 to 6 packets a day.

**Distribution of Study Subjects According to Tobacco Use Among the Undergraduates and Postgraduates**

Out of 1282 undergraduates, 519

(40.5%) were tobacco users and 763 (59.5%) were non tobacco users and out of 978 Postgraduates, 69 (35.2%) were tobacco users and 127 (64.8%) were non users. Undergraduates are consuming tobacco 1.25 times more than postgraduates but no significant difference (p = 0.16) was found in the use of tobacco among the undergraduates and the post graduates (Table 1).

**Comparison of Professionals and Non-Professionals According to Tobacco Use**

Among the 500 professional subjects and 978 non professional subjects, 202 (40.4%) and 386 (37.5%) were tobacco users and 298 (59.6%) and 592 (60.5%) were non users respectively. Professionals were consuming 1.04 times more tobacco than non professionals but there was no significant difference (p = .729) between the tobacco use

among professionals and non-professionals (Table 2, Figure 4).

**Prevalence of Tobacco Use In Different Age Groups**

The subjects were divided into three age groups and the following findings were obtained:

**Tobacco Users**

- 15 to less than 20 years: The tobacco user in this group were 193 (32.8%) and 289 were the non users (32.5%).
- 20 to less than 25 years: The tobacco user in this group were 326 (55.4%) and 501 (56.3%) were the non users.
- 25 to 30 years: The tobacco user in this group were 69 (11.7%) and 100 (11.2%) were the non users.

Maximum number of tobacco users out of 588 was seen in the age group of 20 years to less than 25. No significant difference (p = 0.136) was found between the tobacco usage and the age groups

**DISCUSSION**

Age-old practice “using tobacco” is a well known major global concern as it victimizes all its lovers (7).

Substance use among college and university students remains an important area of research (8). Among the youth, students are particularly involved due to increasing academic pressures and uncertain career. Encouragement from peer group, the lure of popularity, and easy availability of tobacco and alcohol in different forms make a teenager an easy prey.

**Table 1: Distribution of study subjects according to tobacco use among the undergraduates and postgraduates**

	Tobacco User	Non- User	Total	p-Value	Odds Ratio (1/2)
Under Graduate	519 (40.5%)	763 (59.5)	1282 (100%)	0.160	1.252
Post Graduate	69 (35.2%)	127 (64.8%)	196 (100%)		
Total	588 (75.7%)	890 (124.3%)			

**Table 2: Comparison of professionals and non-professionals according to tobacco use**

	Tobacco User	Non- User	Total	p-Value	Odds Ratio (1/2)
Professionals	202 (40.4%)	298 (59.6%)	500 (100%)	0.729	1.040
Non-Professionals	386 (37.5%)	592 (60.5%)	978 (100%)		

The present study is a cross sectional study carried out in Mathura city to assess the prevalence of tobacco use among professional and non-professional college students in the age group of 15 to 30 years. Out of the study sample of 1478, professionals were 500 in number (33.2%) and 978 (66.2%) were non professionals. Most of the participants i.e. 827 (56%) belonged to the age group of 20 years to less than 25 years, 482 (32.6%) belonged to the age group of 15 to less than 20 years and 169 (11.4%) were of 25 to 30 years.

### Prevalence of Tobacco Use

In our study the prevalence of tobacco use among the college students was found to be 40% respectively. Among the studies from universities and colleges, Odek-Ogunde et al (1999) (9) reported high rates of substance use among students at a Kenyan private university, with rates as high as 54.7% for tobacco use. Although individuals attending college are less likely to use tobacco than those not attending college, rates of use for college students has increased to 28% in 1990. (Wechsler, Dowdall, Davenport, and Castillo, 1995) (10). According to Chatterjee et al (2011) (7) tobacco prevalence was highly significant among medicos and the non medicos, 28.5% study subjects reported to have tobacco use with prevalence rate of 14.3% among the medicos and 43.3% among the non medicos. In our study 40% were tobacco users with the overall prevalence of 34.3% of tobacco use among the professionals and 65.7% of tobacco use in the non-professionals.

Just as global tobacco consumption is shifting between industrialized and developing countries, the tobacco pandemic is spreading to women in a variety of settings. In our study 40% of students were found to consume tobacco. Out of the 40% tobacco users 73% were found to be males and 27% were females. According to Nancy A Rigotti et al. (2000) (11) men was using more tobacco than females (37.9% v/s

29.7%). According to Chatterjee et al (2011) (7) prevalence of tobacco use reported among the males was 40.4% and 5.7% in females. As per the report of "The India, Global Health Professional Student's Survey (GHPSS, 2006)" Ministry of Health and Family Welfare (MHFW), Government of India (GOI) (12) female medical students were significantly less than male medical students to have ever smoked cigarette or used other tobacco products. This rise among women can be attributed to weakening social, cultural, and political constraints, coupled with women's earning power and targeted marketing by tobacco companies. Today, the prevalence of smoking among women in some countries remains high, while surveillance data from other countries provide warning of increasing use among youth, particularly girls (WHO TFI) (13).

In the present study, 22.4% subjects were smokeless tobacco users where as on the contrary in the study done by Nancy A Rigotti et al. (2000) (11) only 6% were consuming smokeless tobacco.

Although the prevalence of tobacco use by college students in our study is high, the intensity of their tobacco use is low. Fourteen percent smokeless tobacco users and 3% smoking tobacco users are taking tobacco for just 1 to 2 times a day, and 3% of smoking tobacco users and 5% of smokeless tobacco users are just occasionally consuming tobacco. These findings were in contradiction with the findings of Chatterjee et al (2011) (7) who has found that 56.6% of subjects are consuming tobacco at least 5 times a day. Even low level of use is a cause for concern. Low levels of tobacco exposure for many years can produce substantial morbidity and mortality, as research on passive smoking shows (Nancy A Rigotti et al., 2000) (11).

Although Tobacco use rates in the United States are decreasing overall,

rates of smoking among individuals aged 18-25 increased from 34.6% in 1994 to 41.6% in 1998 (National Institute of Drug Abuse [NIDA], 2002) (14). Some of the most studied risk factors for substance use among adolescents and young adults include low grade point average, lack of religiosity, early alcohol use, low self-esteem, psychopathology, poor relationship with parents, lack of social conformity (deviance), sensation seeking, perceived peer drug use, and perceived adult drug use (Newcomb MD, 1986) (15).

According to Chatterjee et al (2011) (7) in the pattern of tobacco use, huge share was occupied by filter-tipped cigarette (65%), 9% by bidi (i.e., 65+9=74% were exclusively smokers), 7% by pan-parag etc., 4% by pan-jarda-khaini (i.e., 11% were using exclusively smokeless tobacco), and more importantly 15% of subjects consumed all forms of tobacco. In our study the major share goes to the smokeless form of tobacco use (22.4%) followed by both smokeless and smoking form (11%) and last but not the least 6% were the smokeless users. In the smokeless tobacco form 17% were the gutkha users, 4% pan masala users and 1% khaini users. Among the smokeless form of tobacco cigarette was the commonly used form (6%). According to Gautam DK et al (2011) (16) young adults under 35 years represented the majority of the study population, that is 47% of the total sample, 51% were current cigarette smokers and the difference in age in cigarette smokers and non smokers was not statistically significant.

As per the findings in the study by Chatterjee et al (2011) (7) the modes/forms of use, it was found that proportion of smoking was significantly more in nonmedical group ( $P < 0.002$ ) whereas both chewing ( $P < 0.002$ ) and combination ( $P < 0.007$ ) were significantly higher in medical students. In our study all the forms of tobacco smokeless, smoking and both smokeless and smoking were found to

be significantly higher among the non-professionals ( $p < 0.000$ ).

Limitations:

Several limitations of the study design have to be considered when interpreting the findings from this present study. Some of the limitations of this study are:

- The data obtained may be affected by some under-reporting of tobacco use especially among women, as it is socially and culturally unacceptable for women to get involved in such deleterious habits.
- In our study factors associated with the initiation of tobacco use like peer pressure, social status etc. has not been asked during the survey. These factors are important in planning the tobacco control policies.

## RECOMMENDATIONS

- To help prevent college students from initiating tobacco use irrespective of professional or non-professional, undergraduates or post graduates and to better prepare them to become early adopters of a non-smoking culture, tobacco education programs and harmful effects of alcohol can be introduced into curricula.
- In addition, and probably more importantly, there must be strong policies that will affect the acceptability of smoking or any other form of tobacco use.
- College campuses, especially medical school campuses, should be smoke-free.
- On a broader societal level, tobacco control measures such as those outlined in the World Health Organization Framework Convention on Tobacco Control should be implemented.
- Develop -specific community programmes to prevent initiation and maintenance of tobacco use.
- In developing tobacco control strategies, incorporate the changing cultural, psychosocial, and environmental factors that influence initia-

tion and maintenance of tobacco use among girls and women of all ages as well as boys and men.

- Monitor patterns of tobacco use.
- Ensure that sex-disaggregated data and a gender analysis are included in surveillance systems, research, monitoring, and evaluation of tobacco control programmes.
- Due to the early age of onset of substance use found it is recommended that these interventions must target people as young as possible, and involvement of peers and role models would have a high probability of success.

## CONCLUSION

This study has demonstrated a high prevalence of tobacco (40%) usage among college students of Mathura and a generally consistent finding obtained was that tobacco use was higher among males as compared to females. The findings highlight the need for preventive strategies aimed at young individuals, many of whom take up smoking as a habit, early in life. Dental public health efforts, therefore, need to include and emphasize the role of smoking and not only oral hygiene in primary preventive efforts.

The college years are a crucial period in the development or abandonment of adverse habits like tobacco use. Tobacco use in this group should be monitored closely, and young adults should be included in all tobacco control efforts. Colleges offer a potential site for interventions to discourage tobacco use as students spend maximum time in the college premises. Students get indulged easily in the habits they see around and this is the age group when the peer pressure plays a highly influencing role. Reducing tobacco use of all types among young adults should be a national health priority.

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