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# Prevalence, determinants and perspectives of Tobacco use among male college students: a cross-sectional study in Visakhapatnam

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***Abstract***
***Background:*** *Tobacco use is a major public health problem worldwide. It is estimated that 7 million people die each year from tobacco use. The prevalence of tobacco use is rising in adolescents and young adults. Teenagers easily get influenced by their peers and media to experiment substances like tobacco. Due to lack of awareness on the harmful nature, addictive potential and long-term effects of tobacco use, college students tend to start tobacco consumption. Hence, the present study was done to assess the prevalence, determinants and attitudes of tobacco use among college students in Visakhapatnam.*
***Methods:*** *A cross-sectional descriptive study was conducted in two randomly selected colleges in Visakhapatnam for one month in November 2017. 300 male college students in their first, second and third years of degree were selected for the study. Data on socio-demographic profile and perspectives of tobacco use was recorded using a self-administered, pre-designed, pre-tested and semi-structured questionnaire. Data was analysed by entering it in MS excel worksheet.*
***Results:*** *The prevalence of tobacco use is 17.3% of which 57.7% smoke cigarette, 26.9% use smokeless tobacco and 15.4% smoke beedi. 66.6% of cigarette smokers are ≤ 20 years in age. 56.7% of cigarette smokers belong to urban areas of residence and 63.3% belong to Hindu religion. 60% of current cigarette smokers want to stop smoking. 17.6% are exposed to secondhand smoking at home and 46.6% at enclosed public places. 88.6% noticed tobacco advertisements on television or movies. 72.6% definitely believe that it is difficult to quit smoking once started. 20.3% thought smoking helps them feel comfortable at parties and gatherings. 89% are in favor of banning smoking inside enclosed areas and 85% for banning smoking in outdoor public places.*
***Conclusions:*** *Implementing anti-tobacco awareness programmes, educating students in schools and colleges on the harmful nature of tobacco and developing effective laws is crucial. Providing adequate support and counselling to those willing to quit tobacco is pivotal. Regular surveillance and assessment of disease burden through periodical surveys can help determine the prevalence and attitudes of people, thus allowing for development of more comprehensive and targeted approaches to effectively handle the problem.*
***Keywords:*** *Attitudes, Cigarette smoking, College students, Cross-sectional descriptive study, Prevalence, Socio-demographic profile, Tobacco use.*

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## I. Introduction

Tobacco use is a major public health problem worldwide. It is estimated that 7 million people die each year from tobacco use. Around 890,000 of these deaths each year are as a result of non-smokers being exposed to second-hand smoke.[1] It is estimated that 1.1 billion smoke throughout the world, of which 80% live in low- and middle-income countries.[1] Smoking is the leading cause of preventable death.[2] Based on the current trend, it is estimated that more than 8 million deaths occur worldwide each year due to tobacco use by 2030.[3] Smoking effects every organ of the body.[4] Smoking causes cancer, heart disease, stroke, lung diseases, diabetes, and chronic obstructive pulmonary disease (COPD).[2] On an average, smokers are estimated to die 10 years earlier than non-smokers.[5] With the extent of morbidity and mortality associated with tobacco use and the wide spread prevalence of the issue worldwide, there is a need for periodic and regular assessment of the issue burden along with understanding the attitudes of the people towards the issue. This can help formulate and develop effective laws and health initiatives to handle the threat of this issue. Adolescence or teenage is a transitional phase of life which can be very stressful for the person. The prevalence of tobacco use is rising in adolescents and young adults. Teenagers easily get influenced by their peers, advertisements, television, movies to experiment substances like tobacco. Due to lack of awareness of the harmful nature, addictive potential and long-term effects of tobacco use, college students tend to start tobacco consumption. It is estimated that 5,500 adolescents

start using tobacco every day in India, joining the 4 million young people under the age of 15 who already regularly use tobacco.[6] Hence, the present study was done to assess the prevalence, determinants and attitudes of tobacco use among college students in Visakhapatnam, Andhra Pradesh, India.

## II. Material And Methods

This cross-sectional descriptive study was conducted in two randomly selected colleges (one professional college and one degree college) in Visakhapatnam in the month of November 2017. A total 300 male college students in their first, second and third years of degree were selected for the study.

**Study design:** Cross-sectional descriptive observational study
**Study setting:** This study was conducted in one professional college and one degree college in Visakhapatnam, Andhra Pradesh, India.
**Study duration:** One month in November 2017.
**Sample size:** 300 study participants

**Sample size calculation:** As per recent survey, the prevalence of ever use of tobacco in any form reported to be 25.1 per cent among adolescents in India.[7,8,9] So, using the formula $4PQ/L^2$ for sample size calculation, where P = prevalence is taken as 25 from the above study, Q = 100-P, L = allowable error which is taken as 5, the calculated sample size for the present study was $4*25*(100-25)/5^2$ which is equal to 300.

**Subjects & selection method**: 300 consecutive college students in their 1st, 2nd and 3rd year of degree were selected for the study in November 2017.

**Inclusion criteria:**
1. Students who are willing to participate and gave consent.
2. Only male first, second and third year degree students.

**Exclusion criteria:**
1. Students who were absent on the day of data collection.

**Method of data collection:**

A self-administered, pre-designed, pre-tested and semi-structured questionnaire was used to collect data. The questionnaire was prepared in English. The questionnaire was prepared based on GATS survey methodology.[10] The questionnaire recorded data on socio-demographic profile and the perspectives of tobacco use in the study population. Perspectives of tobacco use were assessed through a series of questions under 6 major domains. They are (i) Susceptibility, (ii) Cessation, (iii) Second hand smoke, (iv) Accessibility, (v) Impact of Advertisements, (vi) Knowledge & Attitude.

**Statistical analysis:**

The data was analyzed by entering it in Microsoft Office Excel worksheet. Categorical variables were expressed as percentages. Percentage value was rounded off to first decimal digit.

## III. Result

The socio-demographic profile of the study population is shown in Table no 1. The response rate for all socio-demographic characteristics was 100% except for family income (96.7%) and social status (95.7%).

**Table no 1**: Socio-demographic profile of the study population

| S.NO | CHARACTERISTICS | FREQUENCY | PERCENTAGE |
|---|---|---|---|
| **1** | **INCOME** | **(n=290)** | |
| | Below poverty line | 97 | 33.4% |
| | Above poverty line | 193 | 65.6% |
| **2** | **RESIDENTIAL AREA** | **(n=300)** | |
| | Tribal | 2 | 0.6% |
| | Rural | 126 | 42% |
| | Urban | 172 | 57.4% |
| **3** | **RELIGION** | **(n=300)** | |
| | Hindu | 244 | 81.3% |
| | Muslim | 18 | 6% |
| | Christian | 35 | 11.6% |
| | Others | 3 | 1% |
| **4** | **SOCIAL STATUS** | **(n=287)** | |

| | | | |
|---|---|---|---|
| | Backward caste (BC) | 125 | 43.4% |
| | Scheduled caste (SC) | 50 | 17.9% |
| | Scheduled tribes (ST) | 14 | 4.8% |
| | Open category (OC) | 98 | 33.7% |
| **5** | **PLACE OF ACCOMODATION** | **(n=300)** | |
| | Hostel | 151 | 50.3% |
| | Residence | 121 | 40.3% |
| | Private | 28 | 9.4% |

As shown in table no 1, majority of study population belong to "above poverty line" category (65.6%) and urban residential areas (57.4%). It is also seen that 81.3% of the study population are Hindus by religion. With regards to the place of accommodation of the student, about half of the study population stay in hostels (50.3%).

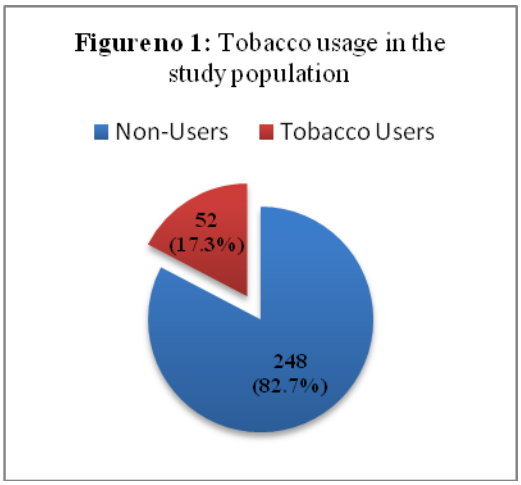
The educational and occupational backgrounds of the participants' families are shown in Table no 2. Education and occupational status of both the mother and father were enquired and the study population is classified using Modified Kuppuswamy's socio-economic status scale, 2017. The response rate for the family education and occupational backgrounds was 96.7%.

**Table no 2**: Family education and occupational backgrounds of the study population

| **S.NO** | **According to Modified Kuppuswamy's socio-economic status scale 2017** | | | | | |
|---|---|---|---|---|---|---|
| **1** | | | **FATHER'S EDUCATION** | | **MOTHER'S EDUCATION** | |
| | **CATEGORY** | **SCORE** | **FREQUENCY (n=290)** | **PERCENTAGE** | **FREQUENCY (n=290)** | **PERCENTAGE** |
| | Profession or honours | 7 | 37 | 12.7% | 14 | 4.8% |
| | Graduate or postgraduate | 6 | 102 | 35.1% | 61 | 21.0% |
| | Intermediate or post high school diploma | 5 | 67 | 23.1% | 46 | 15.8% |
| | High school certificate | 4 | 47 | 16.2% | 76 | 26.2% |
| | Middle school certificate | 3 | 12 | 4.1% | 39 | 13.4% |
| | Primary school certificate | 2 | 8 | 2.7% | 26 | 8.9% |
| | Literate | 1 | 17 | 5.8% | 28 | 9.6% |
| **2** | **CATEGORY** | **SCORE** | **FATHER'S OCCUPATION** | | **MOTHER'S OCCUPATION** | |
| | | | **FREQUENCY (n=290)** | **PERCENTAGE** | **FREQUENCY (n=290)** | **PERCENTAGE** |
| | Profession | 10 | 101 | 34.8% | 34 | 11.7% |
| | Semi-profession | 6 | 39 | 13.4% | 12 | 4.1% |
| | Clerical, Shop-owner | 5 | 52 | 17.9% | 10 | 3.4% |
| | Skilled worker | 4 | 63 | 21.7% | 33 | 11.3% |
| | Semi-skilled worker | 3 | 26 | 8.9% | 17 | 5.8% |
| | Unskilled worker | 2 | 6 | 2% | 11 | 3.7% |
| | Unemployed | 1 | 5 | 1.7% | 173 | 59% |

As shown in Table no 2, majority of the fathers completed graduate or postgraduate education (35.1%) and were working as professionals (34.8%). Most of the mothers completed high school education (26.2%) and were unemployed (59%).

In this study, it was found that 17.3% of the study population use tobacco. Figure no 1 depicts the tobacco usage in this study population.




In the present study population, tobacco is consumed in three major ways. They are (i) Cigarette smoking, (ii) Beedi smoking, (iii) Smokeless tobacco. The mode of consumption of the 52 study participants using tobacco is depicted in Table no 3.

**Table no 3**: Modes of tobacco consumption in the study population

| S.NO | MODE OF TOBACCO CONSUMPTION | FREQUENCY (n=58) | PERCENTAGE |
|---|---|---|---|
| 1 | Cigarette smoking | 30 | 57.7% |
| 2 | Beedi smoking | 8 | 15.4% |
| 3 | Smokeless tobacco | 14 | 26.9% |

It is observed from table no 3 that majority of study population who use tobacco consume it through cigarette smoking (57.7%), followed by smokeless tobacco (26.9%) and beedi smoking (15.4%).
The socio-demographic characteristics of the 30 cigarette smokers in the study population are assessed. This is shown in Table no 4.

**Table no 4**: Socio-demographic profile of cigarette smokers in study population

| S.NO | CHARACTERISTICS | CIGARETTE SMOKERS FREQUENCY (n=30) | PERCENTAGE |
|---|---|---|---|
| **1** | **AGE** | | |
| | 16 years | 1 | 3.3% |
| | 17 years | 1 | 3.3% |
| | 18 years | 5 | 16.7% |
| | 19 years | 6 | 20% |
| | 20 years | 7 | 23.3% |
| | Above 20 years | 10 | 33.3% |
| **2** | **RESIDENTIAL AREA** | | |
| | Tribal | 0 | 0% |
| | Rural | 13 | 43.3% |
| | Urban | 17 | 56.7% |
| **3** | **RELIGION** | | |
| | Hindu | 19 | 63.3% |
| | Muslim | 3 | 10% |
| | Christian | 8 | 26.7% |
| | Others | 0 | 0% |

It is observed from Table no 4 that prevalence of cigarette smoking in the study population is increasing with age. However, majority of cigarette smokers are $\leq$ 20 years in age (66.6%). About half of cigarette smokers in the present study belong to urban areas of residence (56.7%) and majority are Hindus by religion (63.3%).

The perspectives of study population towards tobacco use and control are shown in Table no 5.

**Table no 5**: Perspectives of study population towards tobacco smoking and control

| S.NO | CHARACTERISTICS | FREQUENCY | PERCENTAGE |
|---|---|---|---|
| **1** | **SUSCEPTIBILITY** | **(n=248)** | |
| | Never tobacco users who are susceptible to tobacco use in future | 32 | 12.9% |
| | Never tobacco smokers who thought they might enjoy | 27 | 10.9% |

| | | | |
|---|---|---|---|
| | smoking cigarette | | |
| **2** | **CESSATION** | **(n=30)** | |
| | Current cigarette smokers who tried to stop smoking in the past 12 months | 9 | 30% |
| | Current cigarette smokers who want to stop smoking | 18 | 60% |
| | Current cigarette smokers who thought they would be able to quit smoking if they wanted to | 9 | 30% |
| | Current cigarette smokers who have ever received help from a program or friend to stop smoking | 24 | 80% |
| **3** | **SECOND HAND SMOKING** | **(n=300)** | |
| | Exposure to tobacco smoke at home | 53 | 17.6% |
| | Exposure to tobacco smoke at any enclosed public places | 140 | 46.6% |
| | Exposure to tobacco smoke at any outdoor places | 173 | 57.7% |
| | Students who saw anyone smoking inside or outside college premises | 77 | 25.7% |
| **4** | **ACCESSIBILITY** | **(n=30)** | |
| | Current cigarette smokers who obtained cigarettes by buying from a store | 26 | 86.6% |
| | Current cigarette smokers who were not prevented from buying cigarettes because of underage | 4 | 13.3% |
| | Current cigarette smokers who bought as individual sticks | 25 | 83.3% |
| **5** | **IMPACT OF ADVERTISEMENTS** | **(n=300)** | |
| | Noticing tobacco advertisement in videos and movies | 266 | 88.6% |
| **6** | **KNOWLEDGE & ATTITUDE** | **(n=300)** | |
| | Students who definitely thought it is difficult to quit smoking tobacco once started | 218 | 72.6% |
| | Students who thought smoking tobacco helps people feel more comfortable at parties and gatherings | 61 | 20.3% |
| | Students who are in favor of banning smoking inside enclosed places | 267 | 89% |
| | Students who are in favor of banning smoking in outdoor public places | 255 | 85% |

## IV. Discussion

In this study, we evaluated the prevalence and determinants of tobacco use, as well as the knowledge, attitudes and beliefs regarding tobacco use among college students. The prevalence of tobacco use in the present study was 17.3%. This finding was consistent with the Global Adult Tobacco Survey 2 (GATS 2) on tobacco use prevalence in Andhra Pradesh (20%). This result was lower than the national prevalence of tobacco use from GATS 2 (28.6%) and GATS 1 (34.6%).[10] A study in Kerala showed the prevalence of tobacco smoking as 26.7%.[11] A study in Bangalore showed prevalence of tobacco use as 8.6% among pre-university college students[12] and another study in a medical college in Belgaum showed the prevalence of tobacco use in medical students as 27.1%.[13] In a study by Kumari R et al in Lucknow, the prevalence of tobacco use among male medical students was 28.8%.[14]

In the present study, three major methods of tobacco consumption were observed. Majority of the study population consumed tobacco in the form of cigarette smoking, followed by smokeless tobacco and beedi smoking (57.7% vs. 26.9% vs. 15.4%). Similarly, several studies have shown higher prevalence of tobacco smoking compared to other forms of tobacco use like smokeless tobacco or beedi smoking.[12,13,14] Contrarily, the GATS 1 and GATS 2 have shown that the prevalence of smokeless tobacco use in India was much higher than cigarette smoking.[10] However, the state specific prevalence rates in GATS have shown that cigarette smoking is much higher than smokeless tobacco use in Andhra Pradesh which is consistent with our study results.[10]

In the present study, it was found that majority of cigarette smokers belonged to $\leq$ 20 years age group (66.6%). A survey-based study by Garg S et al interpreted that 89.7% of youngsters initiated smoking at age < 20 years.[15] Another study in Nepal showed that 89.6% of tobacco smokers initiated smoking at the age of 12-18 years.[16] A study on college students in Bangalore showed that the use of cigarettes was more in the age group 17-20 years.[17]

In this study, majority of cigarette smokers reside in urban areas (56.7%). Similar to this finding, a study in Lucknow showed majority of tobacco users come belong to urban residential areas compared to rural. Majority of cigarette smokers in the present study were Hindus by religion. A study in Lucknow and another study among college students in Nepal, also had most of the cigarette smokers belonging to Hindu religion.[14,16]

With respect to the perspectives of tobacco use among study population, 10.9% of non-tobacco users in this study thought they might enjoy smoking cigarette and 12.9% are susceptible to tobacco use in future. 30% of current cigarette smokers have tried to stop smoking in the past 12 months. This slightly lower than the findings in GATS 1 (38.4%) and GATS 2 (38.5%).[10] However, it was much lower than the findings in a cross-

sectional study in Nepal (63.3%).[10] 60% of current cigarette smokers in the present study wanted to stop smoking. This was higher than the rate observed in GATS 2 (55.4%).[10]

In the present study, 30% of current cigarette smokers thought they would be able to quit smoking if they wanted to and 80% of current cigarette smokers received help from a program or a friend to stop smoking. In a study by Sreeramareddy CT et al, 66.6% of current smokers thought that they can quit and 55.3% of current smokers had sought help to quit tobacco smoking.[16]

In this study, 17.6% of study population said that they were exposed to second hand smoking at home. This was much lower than the national estimate of 52.3% and 38.7% in GATS 1 and GATS 2 respectively.[10]

Majority of current cigarette smokers in our study obtained cigarettes by purchasing from a store and 13.3% cigarette smokers were not prevented from buying cigarettes even though they are underage. 88.6% students said that they noticed advertisements on tobacco in movies or other media. According to GATS reports, adults who noticed any type of cigarette promotion decreased from 7.4% in GATS 1 to 5.3% in GATS 2.[10] Also, adults who noticed anti-smoking tobacco warning on the television or radio was 68% according to GATS 2.[10] In a study conducted in Andhra Pradesh, majority of study participants agreed to the impact of advertisements on smoking in youngsters.[15] Another study in Nepal showed that 82% of students noticed tobacco related advertisements in the past one month.[16]

In our study, 72.6% thought it was difficult to quit smoking once started. In another study, 69.9% of study population agreed that smoking causes addiction.[15] 20.3% of the study population thought that smoking help people feel more comfortable at parties and social gatherings. In a study by Garg S et al, 45% of the study population believed that smoking increases peer interaction.[15]

In the present study, 85% were in favour of banning smoking in outdoor public places. Similarly, a study in Andhra Pradesh by Gavarasana S et al, showed that there was a strong opinion among students to ban smoking in public places.[18] In another study, 58.8% of study population agreed to prohibit smoking in public places.[15]

## V. Conclusion

Adolescents and young adults are easily influenced by peers, advertisements and media and hence, are at highest risk of tobacco abuse. Targeted interventions aimed at high risk groups can help bring awareness and reduce overall disease burden. Implementing anti-tobacco awareness programmes, educating students in schools and colleges on the harmful nature of tobacco and the importance of developing a healthy lifestyle can create a positive impact in the young minds. In addition, providing adequate support and counselling to those willing to quit tobacco plays a pivotal role. Also, regular surveillance and assessment of disease burden through periodical surveys can help determine the prevalence and attitudes of people, thus allowing for development of more comprehensive and targeted approaches to effectively handle the problem.

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