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Original Research Article

Prevalence and patterns of tobacco use among young adults in India - does perceived stress play a role?

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ABSTRACT

Background: Tobacco use among young people is a public health concern. Perceived stress among young adults as a determinant for tobacco use has not been extensively explored previously in India.
Methods: A cross-sectional study was conducted among young adults aged 18-30 years across India. Data was collected using a self-administered, web-based, online questionnaire, on sociodemographic characteristics, tobacco use and its pattern, and the levels of perceived stress using the Perceived Stress Scale (PSS-10).
Results: The prevalence of tobacco use in our study sample was 25.7% and the mean age at initiation of tobacco use was 20.71 years. Though tobacco use was significantly associated with male gender [aOR=2.26 (1.16-4.38), p=0.01], current alcohol consumption [aOR=13.73 (6.72-28.04), p=0.00] and having known smokers among family and friends [aOR=3.13 (1.39-7.04), p=0.01], there was no association between levels of perceived stress and tobacco use. Cigarettes/beedis were the most commonly used tobacco product, 27.58% of respondents reported using tobacco products daily or for more than half the days of the week and 48.27% of respondents started using tobacco out of curiosity. Seventy percent of users used tobacco during specific events like social gatherings and vacations while 57.47% used tobacco while meeting specific colleagues/ friends.
Conclusions: We found no association between perceived stress and tobacco use. However, current use of alcohol and having knowledge about smokers among family and friends significantly determined tobacco use among our study population. This necessitates more holistic approaches towards behaviour change efforts for tobacco control.

Keywords: Determinants of tobacco use, Patterns of tobacco use, Perceived stress, Tobacco use, Young adults

INTRODUCTION

The use of tobacco has been on the rise in epidemic proportions worldwide. Despite warnings like "Smoking kills" on packaged tobacco products and other initiatives against tobacco use, 1.3 billion people 15 years and over, 80% of whom are in the low and middle-income countries, consumed at least 1 tobacco product up till 2020 globally.[1] Use of electronic nicotine delivery systems like e-cigarettes and vapes is also increasing, with alarming rates of use reported among children and young adults.[2]

Even though cigarette smoking is the most common form of tobacco use worldwide, countries in Southeast Asia have the highest prevalence of smokeless tobacco use.[3,4] Smokeless tobacco use refers to the use of chewing paan (a mixture of Areca nut pieces, lime, spices and tobacco wrapped in a betel leaf); chewing Gutkha (scented tobacco mixed with lime and Areca nut in powdered form); and Mishri, which is a type of toothpaste applied to the gums. Smoked form of tobacco use includes cigarettes and beedis (tobacco wrapped in dried leaves of special trees).[5]

Every year, more than 8 million people die from tobacco use globally.[3] It is one of the contributors to causing non-communicable diseases like ischaemic heart disease, various types of cancers including majorly oral cancers, chronic respiratory diseases, diabetes, and others.[6] Furthermore, 1.3 million non-smokers are killed each year from second-hand smoke, proving that passive smoking is as much harmful and dangerous to people's lives as it is to the smokers themselves.[7]

In developing nations, particularly South-East Asia, tobacco usage continues to be a serious public health issue.[8] The scenario in India is no different than others. It is reportedly the world's second largest tobacco-consuming nation and the third largest tobacco producer.[9] In India, statistics show that 28.6% (266.8 million) of all adults currently use tobacco (smokeless and/or smoked tobacco), with 42.4% of men and 14.2% of women using it.[10] Several sociodemographic and socioeconomic determinants of tobacco use have been documented, including, but not limited to, age, gender, education, marital status, economic status, income group and others.

Perceived stress has shown to be associated with smoking behaviours in previously conducted studies.[11-13] It is the type of stress which is considered as unpredictable and unmanageable by an individual in his daily life, in the absence of any psychosocial stressors or any stressful events.[14] Previous research in adolescents has shown that increased levels of perceived stress may lead to increased instances of tobacco use, especially cigarette smoking.[15,16] This has more to do with the fact that adolescents with high levels of perceived stress may turn to cigarette smoking as a maladaptive pharmacological means to cope with the emotional distress, which otherwise is perceived as unmanageable by them.[16]

The association of tobacco use, especially cigarette smoking, with perceived stress among young adults of this age, and the patterns of tobacco use has hitherto been investigated in very few studies and to the best of our knowledge, has not been investigated in any previous studies in India. Exploring the presence of such association is imperative as it will help in informing policies and initiatives targeting smoking as a coping mechanism in young adults and improving their overall mental health.

The present study was undertaken to estimate the prevalence of tobacco use, its patterns, and its association with perceived stress among young adults in India.

METHODS

A cross-sectional study was conducted among young adults aged 18-30 years across India between February and May 2024. A sample size of 342 respondents was calculated using the estimated population proportion of smoking as 28.6% (GATS-2, 2016-2017), assuming 95% confidence interval, 5% absolute margin of error and 5% non-response rate.[10] People in the age group of 18 to 30 years and residing in India were eligible for participation.

The data was collected using a self-administered, web-based, online questionnaire which was circulated via social media and email to eligible respondents who further circulated the same to their eligible contacts thereby adopting the snowball sampling method. The questionnaire comprised of four sections which included questions related to sociodemographic characteristics, tobacco use and its patterns, and the Perceived Stress Scale (PSS-10) to assess the levels of perceived stress. The Perceived Stress Scale, developed by Cohen et al. in 1983, is an extensively validated psychometric test used to measure perceived stress in individuals. It is a self-reported, subjective questionnaire which has been used in various studies in the form of essentially three versions-PSS-14, 10 and 4 depending on the number of items that the questionnaire includes, PSS-14 being the original version. The questions are rated on a Likert scale and include both positively and negatively worded questions/items to deduce the level of stress being perceived by the respondent in his life.

Our questionnaire included questions from the PSS-10 scale with specific questions like 'In the last month, how often have you been upset because of something that happened unexpectedly?', 'In the last month, how often have you felt that you were unable to control the important things in your life?', 'In the last month, how often have you felt nervous and stressed?', 'In the last month, how often have you felt confident about your ability to handle your personal problems?', 'In the last month, how often have you felt that things were going your way?' and other similar questions related to an individual's ability to handle stress which they perceive as being unpredictable in their daily life. The individual is scored on a scale of 0-40 with the levels of perceived stress being classified as low (0-13), moderate (14-25) and high (25-40).

The independent/predictor variable was perceived stress among the respondents and the dependent/outcome variable was smoking/tobacco use among them. Other covariates included sociodemographic characteristics like age, sex, marital status, living situation, occupation and region/state of residence. Questions related to patterns and frequency of tobacco use like 'if there is any specific time of use in the day by the respondent', 'if tobacco is used while with specific friends/colleagues', 'while taking breaks from work', 'during specific events', 'while under some stress' and others were included in the questionnaire. Motivation factor to start smoking, age at initiation of smoking and the types of tobacco products used were also the other variables included.

The data analysis was done using SPSS statistics version 22. Descriptive statistics included assessments of mean, standard deviation, frequency and percentage. All variables were computed in proportions and associations

were tested for statistical significance using chi-square testing, and logistic regression was performed to adjust for various cofactors A p-value of <0.05 was considered as significant.

Ethical approval for the study was obtained from the Institutional Student Review Board. Participant information sheet and informed consent form were included in the beginning of the online questionnaire in both English and Hindi. No identifying information was collected, and all data were kept confidential and used for research purposes only.

RESULTS

We received 339 responses to our questionnaire. The mean age of the respondents was found to be 24.54 years.

Table 1: Sociodemographic characteristics of study population.

Sociodemographic characteristics	Frequency (%) (n=339)
Mean age (in years) (SD)	24.54 (2.964)
Gender	
Males	101 (29.8)
Females	238 (70.2)
Occupation	
Student (UG)	112 (33)
Student (PG)	130 (38.3)
Non-student	97 (28.6)
Marital status	
Unmarried/single	276 (81.4)
Married/in a relationship	63 (18.6)
Living situation	
Alone	46 (13.6)
With friends/flatmates	64 (18.9)
With parents/siblings/relatives/guardiar	196 (57.8)
With spouse/partner	33 (9.7)
Use of tea/coffee	
Yes, almost daily	214 (63.1)
Yes, occasionally	93 (27.4)
No	32 (9.4)
Use of alcohol	
Consumed once/twice in past	67 (19.8)
Used to regularly consume in the past	4 (1.2)
Currently consume occasionally (social drinking)	112 (33)
Currently consume frequently (once or more in a week)	9 (2.7)
Never consumed	147 (43.4)

There were 29.8% males and 70.2% females, and 28.6% of the respondents were either working professionals or had completed their studies while the rest were pursuing under-graduation or post-graduation. Most of the respondents (81.4%) were unmarried/single, 57.8% lived with their families and 42.2% lived alone, with their friends/flatmates or with their spouses/partners. More than a third of the respondents (35.7%) were current users of alcohol (Table 1).

The prevalence of tobacco use in our study sample was 25.7% and the mean age at initiation of tobacco use was 20.71 years. Among the tobacco users, cigarettes/beedis were found to be the most commonly used tobacco products (60.91%, Figure 1), 27.58% of the respondents reported using tobacco products daily or for more than half the days of the week (Figure 2), and 48.27% of the respondents said that they started using tobacco/ smoking out of curiosity (Figure 3).

Seventy percent of users used tobacco during specific events like social gatherings, vacations etc. while 57.47% reported that they used tobacco while meeting specific colleagues/friends (Figure 4).

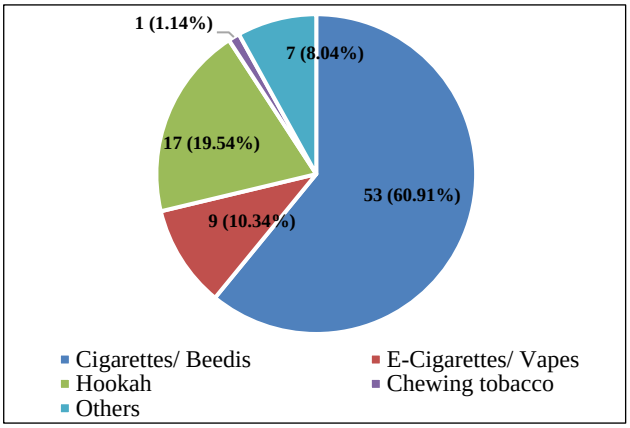

Figure 1: Most commonly used tobacco products (n=87).

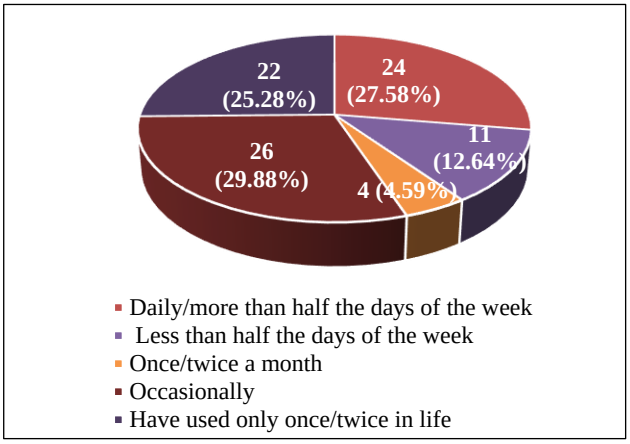

Figure 2: Frequency of tobacco usage (n=87).

It was found that 14.7% of our study sample reported high stress (perceived stress score of 26-40; mean, SD 29.39, 3.29), 70.8% reported moderate levels of stress (perceived stress score of 14-25; mean, SD 19.12, 3.24) and 14.5% of the respondents had low stress (perceived stress score of 0-13; mean, SD 10.73, 2.22).

Males were more likely to be tobacco users as compared to females. Occupation and tobacco use were also found to be significantly associated, with employed people and non-students being more likely to use tobacco than current students. A strong association was also seen between alcohol consumption and tobacco use with current users of alcohol being more likely to also use tobacco. Tobacco use was also significantly higher among respondents who knew of friends or family members who were smokers (Table 2).

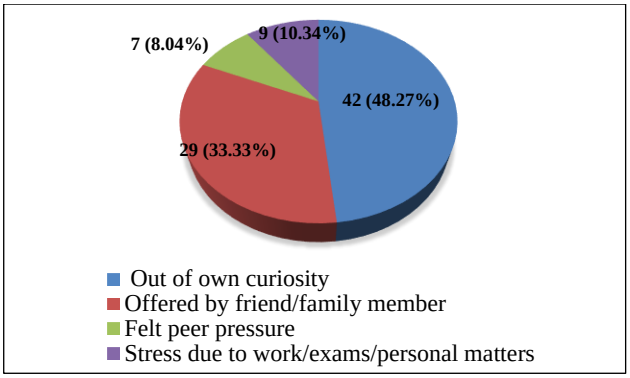

Figure 3: Motivation factor for initiation of smoking (n=87).

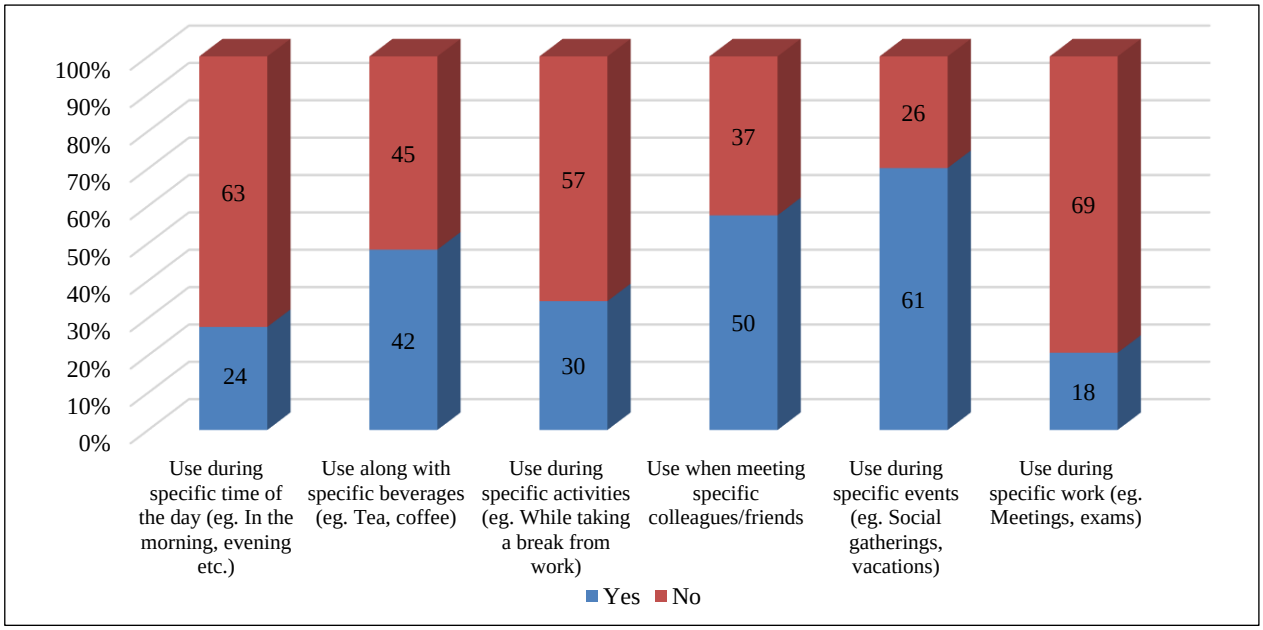

Figure 4: Patterns of tobacco use (n=87).

Table 2: Association between exposure variables and tobacco use.

Variables	Categories	Users Freq. (%)	Non-users Freq. (%)	Odds' Ratio (95% CI)	P value
Perceived stress levels	Low	16 (32.7)	33 (67.3)	1.50 (0.78-2.88)	0.226
	Moderate/high	71 (24.5)	219 (75.5)		
Gender	Male	41 (40.6)	60 (59.4)	2.85 (1.71-4.75)	0.000
	Female	46 (19.3)	192 (80.7)		
Occupation	Not a student	43 (44.3)	54 (55.7)	3.58 (2.14-6.01)	0.000
	Student	44 (18.2)	198 (81.8)		
Marital status	Unmarried/single	65 (23.6)	211 (76.4)	0.57 (0.32-1.03)	0.062
	Married/in a relationship	22 (34.9)	41 (65.1)		
Tea/coffee consumption	Yes, daily/ occasionally	81 (26.4)	226 (73.6)	0.64 (0.26-1.62)	0.347
	No	6 (18.8)	26 (81.3)		
Alcohol consumption	Current user	71 (58.7)	50 (41.3)	17.93 (9.60-33.48)	0.000
	Past/non-user	16 (7.3)	202 (92.7)		
Living situation	Living alone/with friends/ spouse/partner	36 (25.2)	107 (74.8)	0.96 (0.58-1.57)	0.860
	Living with family	51 (26)	145 (74)		
Known smokers among	Yes	76 (35.2)	140 (64.8)	5.53 (2.80-10.90)	0.000

Continued.

Variables	Categories	Users Freq. (%)	Non-users Freq. (%)	Odds' Ratio (95% CI)	P value
friends/ family	No	11 (8.9)	112 (91.1)		
Age of the respondent (years)	24-30	69 (31.5)	150 (68.5)	2.61 (1.46-4.64)	0.001
	18-23	18 (15)	102 (85)		

Table 3: Association between exposure variables and tobacco use after multivariate analysis.

Variables	Adjusted Odds' ratio	95% CI for adjusted odds' ratio		P value
		Lower	Upper	
Perceived stress levels	1.096	0.46	2.61	0.84
Gender (male)	2.26	1.16	4.38	0.016
Occupation	1.88	0.91	3.91	0.089
Marital status	0.99	0.45	2.20	0.98
Tea/coffee consumption	1.15	0.33	3.97	0.83
Alcohol consumption (current user)	13.73	6.72	28.04	0.000
Living situation	0.65	0.33	1.25	0.197
Family/friends known smokers	3.13	1.39	7.04	0.006
Age of the respondents	0.83	0.37	1.88	0.66

After adjusting for covariates, tobacco use was still found to be significantly associated with the male gender [aOR=2.26 (1.16-4.38), p=0.016], with current alcohol consumption among respondents [aOR=13.73 (6.72-28.04), p=0.000] and with having known smokers among family/friends [aOR=3.13 (1.39-7.04), p=0.006]. (Table 3).

DISCUSSION

Our study investigated the determinants of tobacco use among young adults in India including perceived stress, which has hitherto not been focused upon. The prevalence of tobacco use among our study population was 25.7%. This is consistent with the findings of surveys like GATS-2 which shows the prevalence of tobacco use as 28.6%. Although these findings are contrary to those seen in another study done among adults aged 15 years and above in district Gautam-Budh Nagar in India only which found the tobacco use prevalence to be a much higher 50.4%.[9] Our findings also support earlier research conducted in India and other nations as well, indicating that men have a higher propensity to smoke.[5,8,9,17-20] According to a study on the global prevalence of tobacco use, the percentage of men who now use both smoked and smokeless tobacco products ranges from 0.2% in the Ukraine and Mexico to 17.9% in Nepal. These figures are based on gender-specific estimates of tobacco usage.[20]

In five different countries, there have been reports of dual use of cigarettes and hookah/waterpipes: 0.3% in India, 0.4% in Egypt, 2.6% in Russia and Vietnam in 2009-10 and 6.0% in the US in 2013-14. Men were at least twice as likely as women to be dual users in four South-East Asian countries: Timor-Leste, the Maldives, Nepal, and Indonesia.[17]

Previous studies also showed that tobacco usage increases with increasing age which is consistent with the findings of this study that 24-30-year-olds are more likely to use tobacco than 18-24 year-olds.[5,9,21] This study also found a significant association between alcohol consumption and tobacco smoking which is consistent with previously conducted studies.[21,22] Our study did not find a significant association between perceived stress in respondents with tobacco use among them which is contrary to previous evidence in which a significant association was seen between the two.[15,16,23] One reason for this may be that our study comprised of a larger proportion of female participants.

Tobacco use is a significant public health problem. In India, though the percentage of current tobacco users (all forms) among adults aged 15 years or older was 34.6% according to GATS 2009-10 which has reduced to 28.6% as reported in GATS 2016-17, desired levels of tobacco control has still not been achieved.[10,24] Globally, policies like the WHO Framework Convention on Tobacco Control (FCTC) have made strides in controlling the usage and availability of tobacco products by laying down a framework to implement steps like introducing taxes, controlling illicit trade of tobacco products and other control measures.[25] The National Tobacco Control Programme aims at awareness and behavior change, tobacco cessation strategies and implementation of tobacco control laws to reduce the prevalence of tobacco use.[26] The association between alcohol consumption and tobacco use necessitates a combined approach to tackle the double menace through sustained efforts. Family-focussed approaches may be explored in behaviour change efforts to reduce the influence of family members in smoking initiation among young adults. Further research is necessary to investigate the association between perceived stress and tobacco use among young working adults in India. Initiatives and policies

undertaking stress management and reducing the use of tobacco as a coping mechanism need to be explored.

Most studies done previously including the major nationally representative surveys, like the Global Youth tobacco survey and the Global Adult tobacco survey have focused on investigating the tobacco use prevalence and its determinants among the age group of 13-15 years and 15-24 years as representative of the youth. However, in our study, we have not included adolescents and specifically focused on tobacco use among the young adult population in the age group of 18-30 years, thereby addressing this gap in research to some extent. Our study was undertaken by means of an online questionnaire which has greater ease of access, but we understand that this might decrease the reliability of the data collected. However, our study contributes to evidence regarding determinants and patterns of tobacco use among young adults and highlights priority areas of action for its control.

CONCLUSION

The prevalence of tobacco use among young adults was found to be 25.7%. Though tobacco use was found to be significantly associated with alcohol consumption, male gender and age, we found no association between perceived stress and tobacco use. Respondents were more likely to smoke if they knew of family members or friends who smoked. After adjusting for covariates, tobacco use was still found to be significantly higher among males, among respondents having higher alcohol consumption and among respondents having known smokers among their friends/family.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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