Original Research Article

Prevalence and Pattern of Nicotine Use among College Students in Northern India

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ABSTRACT

Background: It is important to study and understand the pattern and prevalence of nicotine use in youth- especially with their ubiquitous availability, innovations in products (e.g. e-cigarettes, gums, patches) and fast-changing life-style factors as stress, peer-pressure etc.
Aim: We studied the prevalence and pattern of nicotine use, socio-demographic characteristics, and adverse effects of nicotine use amongst college going students. This study also aimed at seeking these consumers' perception regarding regulation of nicotine use for their age group.
Method: This was a cross sectional study, and included participants from various colleges and streams. All data were collected using self-administered semi-structured proforma, after obtaining written consent from the participants. We used Fagerstrom scale for nicotine use, General Health Questionnaire and WHOQOL-BREF for quantifying various domains. Statistical analysis was done using SPSS.
Results: The mean age of students was 22.51±2.95 years, and majority of the participant started nicotine use between 18 and 21 years of age. Out of a total of 525 male participants, 57.90% used nicotine products in some form, while only 10.18% of the 275 female respondents did so. The overall prevalence of nicotine users among college students appears to be 35.8%.
Conclusion: Nicotine use seems to be a common problem among young college students in urban north India. While there are multiple health related ramifications of this pattern, there is a possibility that a large proportion of this population goes on to become addicted to harder drugs, being initiated in this with this apparently harmless addiction.

Keywords: Nicotine; Prevalence; Youth

INTRODUCTION

People around the world have been using nicotine in one form or the other to achieve a sense of well-being. Despite known adverse effects, nicotine use continues to increase at this point, and is predicted to be the single most preventable cause of premature deaths globally. [1] Around a lakh young adults become lifelong tobacco addicts, [2] which kills nearly half of them prematurely from ailments caused due to this. [3] India is stated to have the fastest rise in nicotine-related deaths in the first two decades of the 21st century. [4] This addiction pattern varies with factors as age, gender, culture, race, religion, socio economic status, family background, etc.; and forms a gateway to the use of other substances in future.

The ongoing increase in the consumption of tobacco amongst youths is emerging as a complex and multidimensional problem, Nicotine as 28.5% amongst in students [5] 35.74% [6] and 28% [7] in medical students, 11.8% in students of various streams in city Bangalore. [8]

In this study we have targeted youth because youths' life is full of uncertainty, challenges, and stressed moreover enthusiasm and pleasure are key factors of youth's life. To balance these contradictory behavior youth get indulged in pleasure seeking behavior like substance use. Since nicotine products are freely available, culturally accepted, so its use is more prevalent. So, this study was designed to assess the prevalence and pattern of tobacco consumption among college students of Agra as well as to gather information regarding perceptions of harm to health, addictiveness, and social acceptability of various forms of nicotine products and the plausible measures to fight this.

MATERIALS AND METHODS

This is cross-sectional study conducted at the various colleges of Agra city. Study includes all the students attending college in various streams and giving written informed consent.

Sample Size- sample size calculated on the basis of previous study taking prevalence rate 33%considering allowable error 10%. [9] It came to be 779. So for ease of calculation, we take sample 800 college going students.

Method

All data was collected using self-administered semi-structured proforma, after guiding the students about proforma, scales and their scoring in respective class-rooms and all the proforma were collected after half an hour. Participants were assured of anonymity and confidentiality and had the liberty to leave question if they wish. Data was collected on various parameters such as age, sex, marital status, occupation, education. Information was also recorded on type of family, religion, caste, family income and the number of past and current substance users. Each participant was also assessed on WHO-QOL-BREF, General Health Questionnaire, and Fagerstrom scale. The complications due to nicotine use were assessed on Likert scale on various parameters. Statistical analysis was done using the SPSS. The frequencies and percentages were computed for the categorical variables and their significance in relation to Fagerstrom scale was computed using chi-square test. Mean and standard deviation were calculated for the continuous variables and their correlation between the variables was assessed by means of the Pearson's correlation coefficient using SPSS software.

RESULTS

Table 1: Prevalence of nicotine use with respect to various sociodemographic characters

Sociodemographic Profile				Nicotine use	
Category	Variable	Frequency	Percentage	Smokeless (%)	Smoked (%)
Age	15-20	246	30.8%	52(21.13)	53(21.54)
	21-25	409	51.1%	76(18.58)	96(23.47)
	26-30	142	17.8%	9(6.33)	28(19.71)
	31-35	3	0.4%	0(0)	0(0)
Sex	Male	525	65.6%	139(17.37)	165 (20.6)
	Female	275	34.4%	16 (2)	12 (1.5)
Marital status	Unmarried	718	89.8%	138(17.25)	162(20.25)
	Married	82	10.3%	17 (2.1)	15 (1.87)
Residence	Hosteller	537	67.1%	106(13.25)	128 (16)
	Dayscholar	263	32.9%	49 (6.12)	49 (6.12)
UG	Art	200	25.0%	56 (7)	34 (4.25)
	MBBS	200	25.0%	20 (2.5)	50 (6.25)
	B.Tech	200	25%	36 (4.5)	60 (7.5)
P.G	Mixed	200	25%	43 (5.37)	35 (4.37)
Stream	Science	522	65.25%	88 (20.85)	131(31.05)
	Art	278	34.75%	74(26.61)	46(16.54)

Table 2: Pattern of nicotine use in college students

Category	Variable	Smokeless					Smoked		
		Pan masala/Gutkha	Khaini	Jarda	Tooth powder	Chewing-gum	Bidi	Cigarettes	Hukkah
Age	15-20	29	7	3	8	5	7	46	0
	21-25	51	11	1	11	2	14	82	0
	26-30	18	3	1	2	3	5	22	1
	31-35	0	0	0	0	0	0	0	0
Sex	Male	95	20	5	12	7	26	139	0
	Female	3	1	0	9	3	0	11	1
Religions	Hindu	66	14	3	16	10	22	122	1
	Muslim	20	7	2	3	0	3	22	0
	Jain	4	0	0	0	0	1	3	0
	Sikh	7	0	0	0	0	0	2	0
	Other	1	0	0	0	0	0	1	0
Marital status	Married	10	2	1	2	2	2	13	0
	Unmarried	88	19	4	19	8	24	137	1
Residence	Hosteller	72	12	2	14	6	18	110	0
	Dayscholar	26	9	3	7	4	8	40	1
U. G.	Art	38	11	0	5	2	11	23	0
	B.Tech	6	0	5	6	3	3	47	0
	MBBS	23	4	0	7	2	4	56	0
P. G.	MA	5	3	0	0	1	1	7	0
	Msc	8	2	0	0	7	6	8	0
	M.Com	6	1	0	2	0	0	4	0

Table 3: Other substance Use

Variable	Frequency				
	Alcohol	Bhang	Ganja	Charas	Illicit drugs
Male	203	8	4	4	3
Female	22	1	1	0	0
Total	225	9	5	4	3

Table 4: Problems due to nicotine

	Familial	Financial	Social	Work	Legal	Physical
No problem	223	218	205	224	232	195
Little Problem	20	17	24	9	9	31
Some problem	16	23	32	29	19	38
Very much problem	18	19	16	15	16	9
Problems but manageable	7	9	4	8	9	11
Problems but not manageable	2	0	5	1	1	2

Table 5: Various associated factors with nicotine use

Initiation of nicotine	Influence with friends	112(39.16)
	Stress/sadness/family prob.	50(17.48)
	Fun	42(14.68)
Continue use	Addiction	72(25.17)
	Fun and friends	107(37.41)
Quitting	Family pressure	105(30.25)
	Health problems	93(26.80)
To decrease nicotine use	Leave peer group	96(33.56)
	Develop healthy life style	92(32.16)
Role of society	Arranging self-help group	108(37.76)
	Awareness programs	96(33.56)

Table 6: Correlation of Nicotine use with WHOQOL, GHQ and Fagerstrom

Pearson correlation							
Variable	Test	WHOQOL-BREF				GHQ	Fagerstrom
		Dom-1	Dom-2	Dom-3	Dom-4		
Smokeless	Pearson correlation	.030	-.126*	.014	-.079**	.046	-.024
	Sig. (2-tailed)	.397	.000	.682	.026	.195	.489
	N	800				800	800
Smoking	Pearson correlation	.011	-.346*	.041	.010	.065	.092*
	Sig. (2-tailed)	.766	000	.700	.782	.065	.009
	N	800				800	800
Total	Pearson correlation	.010	-.286*	-.002	-.071**	.092*	.054
	Sig. (2-tailed)	.770	.000	.955	.045	.009	.129
	N	800				800	800

*correlation is significant at .01 (2-tailed) **correlation is significant at .05 (2-tailed)
Dom- Domain, GHQ- General Health Questioner

Figure:1
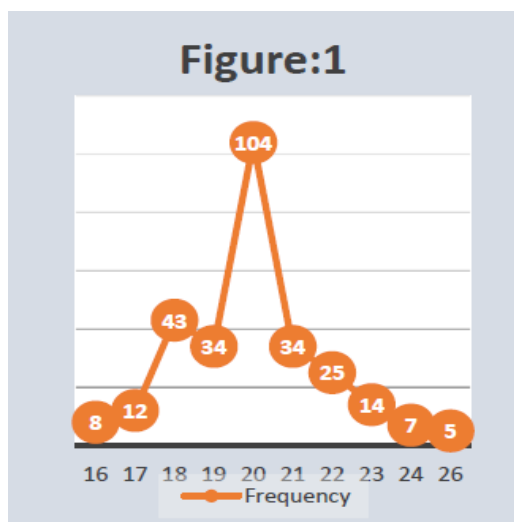
DISCUSSION

The present study was done to establish the prevalence and pattern of nicotine use among college students. In our study we have taken total 800 participants.

The students were of age 18-32 years with mean age of 22.51±2.958 years. Out of total 800 participants majority of the students (409/800) were from the age group of 21-25 years (Table-1) as evident in the literature by Vadvadgi V. H. et al. and were found to be major nicotine users. [10]

Out of total 800 students, 525 (65.6%) were males, of which 139/800 (17.37%) were using various forms of smokeless tobacco and 165/800 (20.6%) were using nicotine in smoking forms. 275 (34.4%) were females out of which 16/800 (2%) were using smokeless nicotine while 12/800 (1.5%) were using nicotine in smoking forms(Table-1). This is comparable to study done by Ravi Mehrotra et al. [9] In our study the overall prevalence was found to be 35.75% which was again consistent with Mehrotra et al [9] that concluded prevalence rate of 33%. A distinction was also made on the basis of marital status. 718/800 (89.8%) students were unmarried and 82/800 (10.3%) were married. The prevalence of nicotine in unmarried participants were found to be 41.78%, while in case of married the scenario was changed to 18.82%. This might be due to family pressure make them necessitate to quit nicotine use. The prevalence of nicotine use among hostellers and day-scholars were found to be 43.57% and 37.26% respectively. This difference again explains role of family in nicotine use. Joge U. S. et al found that 36.26% hosteller and 17.07% day-scholars [11] were using nicotine while Saurabh Aggarwal et al found 32.5% hosteller and 15.78% day-scholars were using nicotine in various forms. [12] This discrimination might be due to small sample size that is 212 and 225 participants in former and later studies respectively

Among undergraduate and post-graduate students, there were very little difference in prevalence of nicotine use and found to be 36.83% and 32.5% in undergraduates and post-graduates respectively (Table -2). Very similar results were noticed, as 41.95% 43.16% in science and art stream respectively. This might be helpful to blame peer group, environmental, and stress factor for nicotine use rather than the study pressure.

Majority of participants (36.36%) started using substance first at the age of 20 years, followed by 18 years and 21 years. Figure 1 also shows that probability of initiation of any substance is highest in between 18-21 year followed by decreasing course in either direction. But Muneer A. Bhat et al in 2014 found that majority of participants started smoking at age 11-20 year. [13] It might be because they studied only smoking part of nicotine use and all participants belonged to medical profession. Despite of this we cannot exclude geographical and climatic variation in substance initiation. Janki Batwal et al in 2014 found that majority of students (97.73%) initiated tobacco consumption after age of 20 years which is consistent with our study. [14]

229/800 (28.6%) participants had started substance consuming habit in the form of nicotine while 98/800 (12.3%) started in the form of alcohol as primary substance. Very few, 21 students were also consuming other substance like cannabis preparation, and other illicit drugs.

Out of total 286 nicotine users, 98 (34.26%), 21 (7.34%), 5 (1.7%), 21 (7.34%), 10 (3.4%), 26 (9.09%), 150 (52.44%) were using nicotine in the form of Pan-Masala/Gutkha, Khaini, Jarda, Tooth powder, chewing-gum Bidi and cigarettes respectively(Table-2).

Complication due to nicotine was assessed on Likert scale in 6 domains as familial, financial, social, work legal and physical. Majority of nicotine user rated little problem or some problem in all domains while very few rated it in extreme direction of problem but not manageable (Table: 4). Each nicotine user had expressed their problem in more than one domain.

Participants have a positive family history of nicotine use, of which male family members (father {15.75%}, grandfathers {16.50%}, and brothers {7.75%}) are most frequent users. These finding were consistent to a small survey conducted in Uttar Pradesh which concluded that tobacco users were 51% male in rural areas while 45% in urban areas. [15] With this result we concluded that tobacco consumption is much more common in general population as compared to college students.

With above results, it is clear that main reason for initiation of nicotine in any form were friends 112 (39.16%) followed by stress/sadness/family problems 50 (17.48%). Few participants also blamed to relationship problems and advertisements/ movies (Table-5). Surprisingly 42 (14.68%) participants were using nicotine for fun and 13 (14.68%) for style/showing off. Similar variations were also seen in previous study conducted by Jogi U. S. et al in 2011[11] and Saurabh Aggarwal 2012 who found peer pressure as most common factor responsible for nicotine initiation. [12] A study conducted by Swati Khan et al in 2012 concluded that 2.17% participants used tobacco for fun. [6] While Janki Bartwal et al in 2014, found 38.63% participants used tobacco for fun. [14] This variation might be due to small sample size and variations in locality of participants. (Col) Prakash G Chitalkar et al

in 2015 found 16% and 19% tobacco users blamed to movies and academic stress respectively for initiation of tobacco products. [16] In our study, 72 (25.17%) participants were continuing use of nicotine because of addiction while 48 (16.78%) continued it to overcome tension. Our finding regarding continued use of nicotine is consistent to previous study by (Col) Prakash G. Chitalkar et al. On searching out reasons for quitting of nicotine out of 347 participants, 71 (24.82%) participants even did not respond to this question while 105 (30.25%) participants were trying to quit because of family pressure and 39 (11.27%) participants due to fear of harmful effects of tobacco. Positive aspect of this study was 61/347 (17.57%) participants have already quitted nicotine consuming habits while 215/347 (61.95%) are willing to quit their habit but never tried for it. As found by Saurabh et al in 2012, a total 118 respondents indicated that they would try to quit tobacco use in future. [12] But there was no estimated number of tobacco users who quit their habit. While Swati Khan et al in 2012 noted that 21.29% participants wanted to quit their habit of tobacco use. [6] Janki Bartwal et al concluded in 2014 that about two third (63.64%) participants were willing to quit habit of tobacco use. [14] This discrimination might be due to level of awareness regarding tobacco. Opinion of 286 nicotine users, 96 (33.56%) participants gave opinion to reduce nicotine use was to leave out their peer group and same percentage of 32.16% participants gave positive opinions for healthy life style while 60 (20.97%) did not give any opinion to this question. On asking what should be done to decrease nicotine use in society, majority of respondents were in favour of arranging self-help groups (37.76%) and awareness programs (33.56%).

We also found negative correlation between nicotine use and psychological stress, social relationship and environmental domain of WHO-Quality of Life which is consistent with previous studies. Kristina S. A. found in his study that the HRQoL

among men smokers with high dependence had the lowest score of HRQoL (50.69±5.58) compared to low (61.32 ±6.87), low-moderate (62.12±9.12) and moderate dependence (58.38±5.74). [17]

CONCLUSION

The prevalence of nicotine users among college students is 35.8%, and smoking is most prevalent in case of medical students which is 30%. Students use nicotine in various forms such as Khaini, Jarda, Gutkha, Bidi, and Cigarette besides these students also use tobacco tooth powder and nicotine chewing-gum. Later two emerged as newer method of nicotine use. 39.16% nicotine users blamed to their friends while 18% to stress for initiation of nicotine. Major factor for continuous use was fun and friends, so those who want to quit nicotine use, they were ready to abandon their peer groups. Quality of life was also compromised amongst nicotine users and there are negative correlation between nicotine dependence and quality of life.

Limitation
Private college not included in this study. Prevalence and pattern might be different in private college due to socioeconomic status.
Study has not considered geographical variation. There is no standardization of tobacco product except nicotine chewing-gum.

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