

Prevalence of usage of Tobacco and its various correlates in District Gautam-Budh Nagar, Uttar Pradesh

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ABSTRACT

Context: Tobacco use is the leading single preventable cause of deaths worldwide. India is the second largest consumer of tobacco in the world. **Aims:** To study the prevalence of tobacco use among the adult population >15 years age of District Gautam-Budh Nagar and find the association of various socio-demographic factors with the tobacco usage. **Settings and Design:** Cross-sectional community-based study conducted in urban and rural areas of District Gautam-Budh Nagar, Uttar-Pradesh. **Subjects and Methods:** The study was conducted among 1461 adults aged 15 years and above in the District Gautam-Budh Nagar. Multistage sampling was used to select the study subjects. The questionnaire used for the interview consisted of questions related to socio-demographic profile, smoking habits and smokeless tobacco use, intention to quit and exposure to second-hand smoke. **Statistical Analysis:** The data were entered and analyzed in SPSS Software version 20.0. The prevalence of tobacco use was expressed in percentages. The association between various socio-demographic factors and tobacco use was assessed by Chi-square test. *P* value < 0.05 was taken as significant. **Results:** Prevalence of tobacco usage in this study was found to be 50.4% (65% among males and 28.8% among females). The prevalence of smoking and smokeless tobacco use in our study was 37.2% and 21.3%, respectively. Increasing age, male gender, and lower educational status were found to be significant risk factors for tobacco use in our study. **Conclusions:** India needs to gear up the efforts more and can still do more to make the proven tobacco control tools work for its citizens' well-being.

Keywords: Smokeless tobacco, smoking, tobacco usage

Introduction

Tobacco use is one of the most important preventable cause of deaths worldwide. Globally, seven million deaths occur every year due to tobacco use.^[1] Most of these deaths are in middle- and low-income nations, which account for almost 80% of all tobacco-related deaths.^[2]

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India is one of the largest tobacco producing nation and second largest consumer of tobacco worldwide. Mortality due to tobacco in India is estimated to be 1.3 million annually.^[3,4] Out of these, one million are attributed to tobacco smoking and the rest to smokeless tobacco use. Tobacco is one of the most important causes of high incidence of oral cancer, accounting for almost half of all oral cancers in the world.^[5] India has the highest burden of both tuberculosis (TB) and multi-drug resistant (MDR) TB based on estimates reported in Global TB Report 2016.^[6] Smoking increases the risk of TB by more than two-and-a-half times.^[7] Smoking also contributes in a major way to India's increasing burden of non-communicable diseases. Tobacco use accounted for 13% of all deaths in India in 2020.^[8]

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The World Health Organization's Framework Convention on Tobacco Control (WHO FCTC), and the target for strengthening its implementation, is a key part of concerted global action against tobacco.^[9]

India was one of the first countries to undertake the Tobacco Control Surveillance in a structured manner, having recognised the importance of high quality information on tobacco use and its role in guiding the country's tobacco control policy and programmes. The rationale of present study was to produce nationally comparable data on tobacco use using a standardized questionnaire, sample design and data collection. The findings generated from this study can be of substantial significance to primary care physicians and family physicians serving the community. When a physician advises a patient suffering from a tobacco-related morbidity to quit, that advice is taken more seriously and finally, the patient succeeds in quitting permanently.

Aims & Objectives

1. To study the prevalence of tobacco use (smoking and smokeless tobacco) among the adult population (>15 years age) of District Gautam-Budh Nagar.
2. To study the association of various socio-demographic factors with the tobacco usage.

Subjects and Methods

Study Design: Cross-sectional study

Study Area: Urban and rural areas of District Gautam-Budh Nagar, Uttar Pradesh

Study Duration: July–December 2018

Study population: The study was conducted in adult population aged 15 years and above.

Sample size: Considering the prevalence of Tobacco use in adults as per GATS-2 Report (2016–2017)^[10] as 28.6% and taking 10% relative error, and considering 10% non-response rate the minimum sample size was calculated as 1100 after rounding off.

$$\text{Sample size} = 4 p \times q / d^2 p = 28.6, q = 71.4, d = 2.86$$

$$= 4 \times 28.6 \times 71.4 / 2.86 \times 2.86$$

$$= 8168.16 / 8.17$$

$$= 999 + 100 \text{ (non- response)}$$

$$= 1099 \text{ (Minimum sample size)}$$

Considering the Census 2011, the area wise population distribution of District Gautam-Budhnagar is 59% in urban areas and 41% in rural areas. Though the minimum sample size

was 1100, but 1461 study subjects were included in the study. Therefore, 860 (58.9%) study subjects were included from urban areas and 601 (41.1%) study subjects from rural areas.

Methodology

The study was conducted among 1461 adults aged 15 years and above in the District Gautam-Budh Nagar (860 subjects from Urban areas and 601 from rural areas). Multistage sampling was used to select the study subjects. The District Gautam-Budh Nagar has three Tehsils, Gautam-Budh Nagar Tehsil, Dadri Tehsil, and Jewar Tehsil. For selection of urban study subjects, one town was selected randomly from each Tehsil. From each town, approx. 286 households were selected randomly. Two villages were selected randomly from each Tehsil to include the rural subjects. From each village, approx. 100 households were selected randomly. One study subject was selected randomly from each household by lottery method. A face-to-face interview of the study subjects was conducted by the Medical Social Workers (MSWs) and the interns in the Department. The MSWs and Interns were sensitized and trained by the investigators for filling the questionnaire. The questionnaire was adapted from GATS questionnaire and WHO STEPS questionnaire. The questionnaire consisted of questions related to socio-demographic profile, smoking habits and smokeless tobacco use, intention to quit and exposure to second-hand smoke.

Statistical analysis

The data were entered and analyzed in SPSS Software version 20.0. The prevalence of tobacco use was expressed in percentages. The association between various socio-demographic factors and tobacco use was assessed by Chi-square test. *P* value < 0.05 was taken as significant.

Ethical considerations

The study participants were explained the purpose of the study and informed consent was taken. The study was approved by Institutional Ethical Committee.

Results

A total of 1461 subjects have been included in the study. Table 1 shows the socio-demographic profile of the study subjects. Amongst the interviewed study subjects, most (24.1%) of them belonged to 25–34 years range. As per the gender-wise distribution, 871 (59.6%) were males and 590 (40.4%) were females. Out of the total study subjects, 860 (58.9%) were residing in the urban areas, whereas, 601 (41.1%) were residing in the rural areas. According to religion, majority of the subjects were Hindus (91.0%), 8.6% were Muslims and 0.4% belonged to the other religions. Of the study subjects, 49.8% belonged to general category, whereas, 50.2% belonged to OBC/SC/ST category. Majority (80.0%) of the study subjects were married. Regarding educational status, 26.8% of study subjects were illiterate whereas 15.1% were Graduates and Postgraduates. About one-third (33.3%) of the study subjects were housewives

and 24.4% belonged to service class category. According to the socio-economic status, majority (81.8%) of the study subjects belonged to the middle class.

The overall prevalence of Tobacco use (either smoking or using smokeless tobacco) was found to be 50.4% (65.0% among males and 28.8% among females) ($p < 0.001$). The overall prevalence of smoking Bidi/Cigarette/Hookah was found to be 37.2% (48.3% among males and 20.7% among females) ($p < 0.001$). The proportion of daily smokers were found to be 32.0% (41.0% among the males and 18.8% among females). Among the smokers, 61.0% expressed their willingness to quit. The prevalence of the use of smokeless tobacco like gutkha, khaini, pan, tobacco, etc., was found to be 21.3% (28.2% among males and 11.0% among females) ($p < 0.001$). The proportion of daily users of smokeless tobacco was found to be 18.0% (24.9% among males and 8.1% among females). Among the users of smokeless tobacco, 60.5% expressed their willingness to quit. The proportion of subjects exposed to second-hand smoke was found to be 42.0% (43.7% among males and 39.3% among females) [Table 2]

The mean age of initiation of smoking was found to be 23.2 years (21.8 years in males and 27.9 years in females) ($p < 0.001$). The mean age of initiation of smokeless tobacco was found to be 20.2 years (19.5 years in males and 22.5 years in females) ($p = 0.028$) [Table 3].

Association of socio-demographic factors with tobacco use

With increasing age, the prevalence of tobacco use among study subjects was found to be increasing and the association was found to be significant ($p < 0.001$). The prevalence of tobacco use was found to be significantly more among the males as compared to females ($p < 0.001$). There was no significant association of tobacco use with respect to area of residence ($p = 0.98$). No association was found between religion of study subjects and prevalence of tobacco use ($p = 0.7$). The prevalence of tobacco use was almost same among the general category and backward class ($p = 0.62$). There was no association found between marital status of study subjects and tobacco use ($p = 0.065$) [Table 4].

The prevalence of tobacco use was found to be more among subjects who were illiterates and educational status of primary to intermediate as compared to graduates and postgraduates ($p < 0.001$). No significant association was found between tobacco use and socio-economic status of the study subjects ($p = 0.052$) [Table 5].

Discussion

Prevalence of tobacco usage in this study was found to be 50.4% (65% among males and 28.8% among females). These findings are considerably higher than Global Adult Tobacco Survey-2 (GATS-2) India survey conducted in 2016–2017 where they reported current tobacco use in any form as

28.6% (42.4% among males and 14.2% among females).^[10] These findings are also appreciably higher than that reported

Table 1: Socio-demographic profile of study subjects (n=1461)

Variable	n (%)
Age Group (yrs)	
15-24	251 (17.2)
25-34	352 (24.1)
35-44	332 (22.7)
45-54	252 (17.2)
55 or above	274 (18.8)
Gender	
Male	871 (59.6)
Female	590 (40.4)
Area of residence	
Urban	860 (58.9)
Rural	601 (41.1)
Religion	
Hindu	1330 (91.0)
Muslim/Others	131 (9.0)
Caste	
General Category	728 (49.8)
OBC	570 (39.0)
SC/ST	163 (11.2)
Marital Status	
Married	1169 (80.0)
Unmarried/Widow/Divorce	292 (20.0)
Educational Status	
Illiterate	392 (26.8)
Primary to Intermediate	849 (58.1)
Graduates/Post-Graduates	220 (15.1)
Occupation	
Housewife	486 (33.3)
Business	251 (17.2)
Service	356 (24.4)
Labourer	213 (14.6)
Student	79 (5.4)
Unemployed	76 (5.2)
Socio-economic status	
Upper	126 (8.6)
Middle	1195 (81.8)
Lower	140 (9.6)

Table 2: Prevalence (%) of tobacco use among study subjects

Variable	Males (n=871)	Females (n=590)	Total (n=1461)	P
Overall Tobacco use	566 (65.0)	170 (28.8)	736 (50.4)	<0.001
Smoking	421 (48.3)	122 (20.7)	543 (37.2)	<0.001
Smokeless Tobacco	246 (28.2)	65 (11.0)	311 (21.3)	<0.001
Passive Smoking	381 (43.7)	232 (39.3)	613 (42.0)	0.092

Table 3: Mean age (in years) of initiation of smoking and smokeless tobacco

Variable	Males (n=871)	Females (n=590)	Total (n=1461)	P
Smoking	21.8	27.9	23.2	<0.001
Smokeless Tobacco	19.5	22.5	20.2	0.028

Table 4: Association of the socio-demographic profile of study subjects with tobacco use

Variable	Tobacco Use n (%)	No Tobacco Use n (%)	Total n (%)	P
Age Group				
15-24	84 (33.5)	167 (66.5)	251 (17.2)	<0.001
25-34	147 (41.8)	205 (58.2)	352 (24.1)	
35-44	166 (50.0)	166 (50.0)	332 (22.7)	
45-54	156 (61.9)	96 (38.1)	252 (17.2)	
> =55	183 (66.8)	91 (33.2)	274 (18.1)	
Total	736 (50.4)	725 (49.6)	1461 (100)	
Gender				
Males	566 (65.0)	305 (35.0)	871 (59.6)	<0.001
Females	170 (28.8)	420 (71.2)	590 (40.4)	
Total	736 (50.4)	725 (49.6)	1461 (100)	
Area of residence				
Urban	433 (50.3)	427 (49.7)	860 (58.9)	0.98
Rural	303 (50.4)	298 (49.6)	601 (41.1)	
Total	736 (50.4)	725 (49.6)	1461 (100)	
Religion				
Hindu	668 (50.2)	662 (49.8)	1330 (91.0)	0.7
Muslim/Others	69 (51.9)	63 (48.1)	131 (9.0)	
Total	736 (50.4)	725 (49.6)	1461 (100)	
Caste				
General	362 (49.7)	366 (50.3)	728 (49.8)	0.62
OBC/SC/ST	374 (51.0)	359 (49.0)	733 (50.2)	
Total	736 (50.4)	725 (49.6)	1461 (100)	
Marital Status				
Married	603 (51.6)	566 (48.4)	1169 (80.0)	0.065
Unmarried/Divorced/Widow	133 (45.5)	159 (54.5)	292 (20)	
Total	736 (50.4)	725 (49.6)	1461 (100)	

Table 5: Association of the educational status and socio-economic status of study subjects with tobacco use

Variable	Tobacco Use n (%)	No Tobacco Use n (%)	Total n (%)	P
Educational Status				
Illiterate	206 (52.6)	186 (47.4)	392 (26.8)	<0.001
Primary to Intermediate	452 (53.2)	397 (46.8)	849 (58.1)	
Graduates/Postgraduates	78 (35.5)	142 (64.5)	220 (15.1)	
Total	736 (50.4)	725 (49.6)	1461 (100)	
Socio-economic Status				
Upper	65 (51.6)	61 (48.4)	126 (8.6)	0.052
Upper Middle	166 (44.9)	204 (55.1)	370 (25.3)	
Middle	220 (49.5)	224 (50.5)	444 (30.4)	
Lower Middle	213 (55.9)	168 (44.1)	381 (26.1)	
Lower	72 (51.4)	68 (48.6)	140 (9.6)	
Total	736 (50.4)	725 (49.6)	1461 (100)	

in National Family Health Survey-4 (NFHS-4) conducted in 2015-16 (44.5% among males and 6.8% among females).^[11,12] In the present study, the prevalence of smoking was found to be 37.2% which is much higher than that reported in GATS-2 India report,^[10] that is, 10.7%. However, the prevalence of smokeless tobacco use in our study (21.3%) is similar to the findings of GATS-2 India survey, that is, 21.4%. This prevalence of smoking and smokeless tobacco use found in our study is higher than that reported by Dixit *et al.*^[13] in rural area of Jaipur, that is, 22.8% and 15%, respectively. In the present study, the mean age of initiation of smoking was found to be 23.2 years

and the mean age of initiation of smokeless tobacco was found to be 20.2 years. These values are higher in comparison to study by Grover *et al.*^[14] which analyzed the GATS-2 findings among the youth (15–24 years) in India. The mean age of initiation of smoking in this study was found to be 17.0 years and the mean age of initiation of smokeless tobacco was found to be 20.0 years. The increasing age, male gender, and lower educational status were found to be significant risk factors for tobacco use in our study. These findings are similar to that reported in a large community-based survey by Kahar *et al.*^[15] conducted in 26 districts of Gujarat.

The findings of this study are also of significance for the primary care physicians and family physicians serving the community. These physicians are among the key influentials that have not yet been brought into the tobacco control effort in an effective way. These physicians come in contact with the community on regular basis regarding the health ailments. This face-to-face meeting offers an opportunity to provide quitting advice and support to the tobacco users. Along with this, these meetings provide an opportunity to deliver information about the serious health effects of both smoking and exposure to second-hand smoke. Apart from the clinics, primary care physicians and family physicians have a much broader prevention role to play in the community at large. They can use their medical and societal role to assume leadership in tobacco prevention strategies in the community. For example, they can create or join local organizations to press for compliance with and enforcement of tobacco control laws such as laws against the sale of tobacco products to minors, establish local regulation of tobacco advertising, promotion, sales, etc., These physicians can also engage in activities that will raise the community's awareness regarding harmful effects of tobacco products.

This study has brought to light an alarming new knowledge that the burden of tobacco use in District Gautam-Budh Nagar, which is one of the developed districts of Western Uttar Pradesh, is appreciably higher than the national average (as per the GATS-2 and NFHS-4 data). The knowledge emerging from this finding should be used to gear up the Anti-tobacco campaign in the District to protect the population specially the youth from this harmful addiction as well as to avoid this major risk factor for various cancers and non-communicable diseases.

Conclusions and Recommendations

The key findings in the present study were:

1. The prevalence of tobacco use in our study was found to be appreciably higher as compared to GATS-2 report as well as NFHS-4 data.
2. Prevalence of tobacco usage in this study was found to be 50.4% (65% among males and 28.8% among females).
3. The prevalence of smoking and smokeless tobacco use in our study was 37.2% and 21.3% respectively.
4. The mean age of initiation of smoking was found to be 23.2 years (21.8 years in males and 27.9 years in females). The mean age of initiation of smokeless tobacco was found to be 20.2 years (19.5 years in males and 22.5 years in females).
5. Increasing age, male gender and lower educational status were found to be significant risk factors for tobacco use in our study.

Though, India has made progress on tobacco control in recent years, but still, people continue to die and become sick needlessly, and the costs to society from tobacco use continue to mount. India can still make big efforts to curb the harmful effects of tobacco. These efforts include:

1. Protect from Smoke

All public places should be completely smoke-free.

2. Offer Help
 - Quitting Resources
 - National quit line
3. Warn About the Dangers to Tobacco Users on Product Packaging
There should be a large health warning on the packs of tobacco products.
4. Warn About the Dangers to the Whole Population in a Media Campaign
5. Enforce Bans on Advertising
6. Raise Taxes: Excise Tax as a % of Cigarette Price

Key messages

It is imperative to accelerate efforts for tobacco control at the global as well as national levels. Efforts, as such, must be focussed on effectively curbing this greatest public health challenge the world is currently facing.

Limitation of the study

The study does not have equal gender representation as females were reluctant to give data on smoking and smokeless tobacco usage. This may be due to cultural purdah practice still prevalent in Indian families.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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