

Determinants of Tobacco Use and Prevalence of Oral Precancerous Lesions in Cab Drivers in Bengaluru City, India

Abstract

Background: Tobacco is a most important risk factor for various types of cancer as well as some noncommunicable disease. Around 34.6% of Indian population consume tobacco. The tobacco consumption is higher in some vulnerable population such as drivers, daily wage laborers, and policemen. Tobacco consumption is known to cause oral cancers, and screening for oral cancer in these individuals is known to reduce mortality from cancer. The study was designed to assess the determinants of tobacco use and the prevalence of oral precancerous lesions in cab drivers.

Methods: This is a cross-sectional study among cab drivers at prepaid taxi counters in Bengaluru city. A total of 450 cab drivers were enrolled in the study, of which 225 cab drivers were interviewed during morning hours and remaining half at night time using a semi-structured questionnaire. All were screened for oral cancer/precancerous lesions. **Results:** Nearly 70.88% of cab drivers were consuming tobacco in any form. Long working hours, working at night, and family members consuming tobacco were significant risk factors for tobacco use among cab drivers. Forty-eight drivers were detected to have oral precancerous lesions. **Conclusions:** It was very evident that long hours of driving and infrequent shifts played a greater role in acquiring the habit. Behavioral counseling and new laws need to be formed to limit the working hours in drivers to have an effective tobacco control.

Keywords: Early detection of cancer, leukoplakia, tobacco use disorder

Introduction

Tobacco consumption is a major preventable risk factor for cancer and other noncommunicable diseases.^[1] It is a major cause for morbidity and mortality in India. Around 1 million people die every year in India due to tobacco consumption.^[2]

According to the Global Adult Tobacco Survey (GATS) 2010, nearly 34.6% of Indian population consume tobacco of which 29.1% consume tobacco daily. The percentage of tobacco use is higher in males compared to females. Around 60% of the tobacco users are dependent of tobacco.^[3]

The tobacco consumed in India can be broadly classified into two categories:

- Smoked tobacco: Cigarette, beedi, cigar, and hookah
- Smokeless tobacco: Gutka, mawa, and khaini.^[4]

Consumption of tobacco is an important risk factor for lung and oral cancer, which are the most common cancers in males in India. Tobacco consumption is also

associated with cancer of esophagus, kidney, cervix, stomach, etc. Apart from cancer, tobacco use is also linked to other illness such as stroke, myocardial infarction, chronic respiratory diseases, and reproductive problems.^[5]

There are precancerous lesions in the oral cavity, which at later stages transform into oral cancer. The precancerous lesion in the oral cavity is leukoplakia, erythroplakia, submucous fibrosis, and lichen planus. There is a strong association between tobacco consumption and precancerous lesion such as leukoplakia, erythroplakia, and submucous fibrosis. There is evidence that screening for oral cancer in high-risk individual is going to reduce mortality and morbidity due to oral cancer.^[6,7]

The prevalence of tobacco use is higher in drivers, factory workers, and laborers, and police personnel is due to their widespread misconception that tobacco consumption will help them to keep alert during working hours.^[8]

Hence, this study is contemplated with an aim to assess the determinants of tobacco

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consumption in cab drivers as this group of population are under constant pressure and work even in odd hours in the city. Through this study, we will be able to find out the prevalence of tobacco consumption in cab drivers, reasons for using it, creating awareness of ill effect of tobacco consumption, prevalence of precancerous lesions in them.

Methods

It is a cross-sectional study conducted among the cab drivers of Bengaluru city. There are more than 100,000 cab drivers in Bengaluru city. The sample size of 450 cab drivers was calculated using the prevalence of adult tobacco users in India, which was calculated using formula $n = 4pq/L^2$, Where

- $P = 47.9$ (prevalence of tobacco use in Indian male population)^[3]
- $Q = (100 - P) = 52.1$
- $L =$ Allowable error (10% of P)
- $n = 4 \times 47.9 \times 52.1 / 4.7^2$
- $= 435.15$
- The sample size was rounded off to 450.

Half of the sample size, i.e., 225 cab drivers were enquired and screened for oral cancer during daytime (8 am to 8 pm), and remaining half of the cab drivers were enquired and screened in night from 8 pm to 8 am. Of the 225 cab drivers who were questioned during morning and night time, they were selected equally from the prepaid taxi counter of airport, railway station, and bus stand, i.e., 75 cab drivers from each area during daytime and nighttime. The cab drivers from the prepaid taxi counter of airport, railway station, and bus stand were selected using simple random sampling. The enquiring and screening of cab drivers were done at prepaid cab counters because it was feasible to get cab drivers at one place and during the waiting period at the cab counter; the data about their tobacco history and screening for oral cancer could be done without causing any hindrance to their work. All those individuals who known to use tobacco in any form were given tobacco cessation service in the form of very brief advice (VBA). The contact details of all the participants were collected and kept confidential and these will be used for further tobacco cessation services. Ethical approval was obtained from the Ethical Committees, and participants signed informed consent after receiving explanation of the study protocols.

Inclusion criteria: Working as a cab driver for more than 1 year and is a full-time cab driver.

Exclusion criteria: Persons not willing to participate in the study.

All the cab drivers were questioned using a preformed semi-structured questionnaire including details of tobacco use. All of them were screened for oral cancer/precancerous lesion by visual inspection using halogen light. All those who were found to be using tobacco in any form were given a VBA about tobacco cessation. The level of nicotine dependence will be calculated using Fagerstrom

scale.^[9] All those who were having precancerous lesions or suspicious lesions for cancer were referred to tertiary cancer hospital for further management.

Statistical analysis used is proportion and Chi-square test and calculated using Microsoft Excel.

Results

Table 1 shows that Out of the 450 cab drivers interviewed, 319 (70.8%) of them consume tobacco in any form. The cab drivers who are older in age, work for more than 10 h/day, who work at nighttime and having any of the family member consuming tobacco are at higher risk of using tobacco compared to other drivers, and the difference is statistically significant at $P < 0.05$.

Of the 319 cab drivers who consume tobacco, 250 of them only chewed tobacco, 15 of them only smoked tobacco, and remaining 54 cab drivers used tobacco in both smoking and smokeless form.

Figure 1 shows the level of nicotine dependence in cab drivers using tobacco. Based on the Fagerstrom scale, the tobacco users are classified into four levels of dependence. In our study, we found that 63 cab drivers were having low nicotine dependence, 228 cab drivers were having low to moderate nicotine dependence, 20 cab drivers were having moderate nicotine dependence, and 8 cab drivers were highly dependent on tobacco/nicotine.

Table 1: Various determinants of tobacco use among cab drivers

Characteristics	Tobacco use		χ^2	df	P
	Yes	No			
Age group					
18-24	64	52	26.21	2	<0.05*
25-39	181	69			
40 years and above	74	10			
Socioeconomic status					
Class I	34	11	0.035	1	0.8513
Class II	103	44			
Class III	107	59			
Class IV	75	17			
Class V	0	0			
Working hours per day					
<6 h	33	42	63.11	1	<0.05*
6-10 h	104	68			
>10 h	182	21			
Time of working					
Day time	75	64	28.12	2	<0.05*
Night time	87	26			
Both daytime and nighttime	157	41			
Any other family members consuming tobacco					
Yes	217	62	16.88	1	<0.05*
No	102	69			

*Statistically significant at $P < 0.05$. Chi-square test

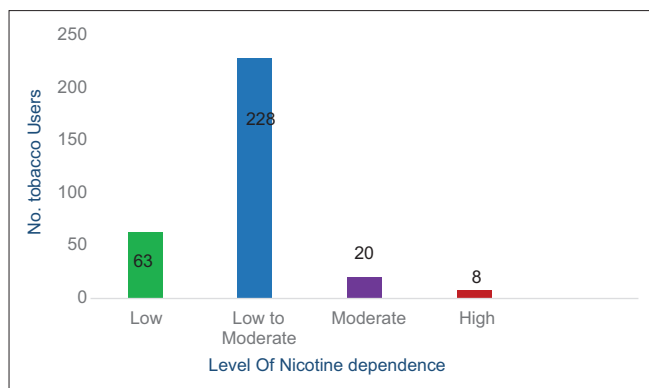


Figure 1: Level of tobacco dependence using Fagerstrom scale

Figure 2 shows the prevalence of precancerous lesion in the oral cavity among cab drivers. Of the 319 tobacco users, 48 cab drivers were detected to have precancerous lesions. None of the nontobacco users had precancerous lesions/oral cancer. Some of the cab drivers had more than one type of precancerous lesion in the oral cavity. Leukoplakia was detected in 32 cab drivers, erythroplakia was detected in 9 cab drivers, and oral submucous fibrosis was detected in 21 cab drivers.

Discussion

In our study, most of the taxi drivers are in the younger age group, i.e., more than 80% of the cab drivers are below the age of 40 years. The rise in the younger individuals opting for this job is due to the recent introduction of application-based cab aggregator firm,^[10] who offer good pay and incentives. The incentives are offered to them based on the number of rides. Hence, to achieve the target to get incentive, many taxi drivers opt to drive for longer hours and even during nighttime. In our study, 70.88% of cab drivers consumed tobacco in any form. This was much higher than the national average among male population in India (47.9%).^[3] Our study has shown that the longer duration of driving and working in night makes the driver more prone to consume tobacco. The reason for this could be stress, sleep deprivation, and compulsion to keep himself alert during odd hours of work. Another factor which increases the risk of tobacco consumption is the other family members consuming tobacco. Similar results were found in the study conducted by Dwivedi *et al.* on the role of family milieu in tobacco addiction in 2013.^[11]

Around 55% of cab drivers consumed only smokeless tobacco in the form of gutka, khaini, and zarda, etc., which is higher than the national average of 23.6%.^[3] Only 3.3% of cab drivers consumed only smoked tobacco in the form of cigarette, beedi which is less compared national average of 15%;^[3] the reason could be the drivers cannot smoke during driving as the passengers could object to the exposure to the second-hand smoke. Around 12% of the cab drivers consumed tobacco in both smokeless and smoked form which is slightly higher than the national

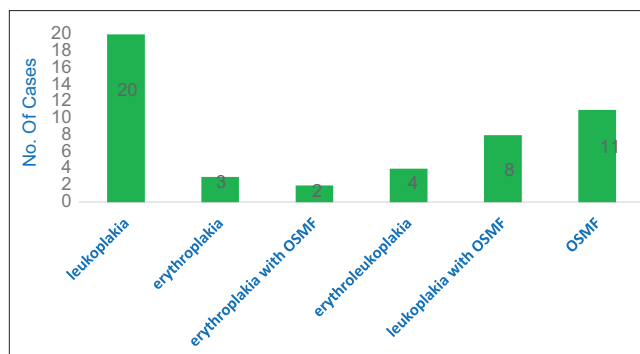


Figure 2: Prevalence of oral precancerous lesion

average of 9.3%.^[3] Our study showed that higher age group cab drivers consume tobacco more than the younger age group cab drivers. Similar findings were found in the GATS India survey, where the tobacco use was higher in older age groups.^[3]

The Fagerstrom scale of <5 was seen in 291 cab drivers, and 5 and above was seen in 28 cab drivers who were using tobacco. Hence, the moderate to high nicotine dependence was seen in 28 (8.7%) of cab drivers using tobacco, which was similar to the study conducted by Manimunda *et al.* in Andaman and Nicobar Islands where they found the percentage of nicotine dependence (Fagerstrom scale of 5 and more) was 6.4% among tobacco users.^[12]

Forty-eight cab drivers were found to have oral precancerous who were all having history of tobacco use. None of the nontobacco user was detected to have precancerous lesion or signs or symptoms suspicious for oral cancer. Similar finding was seen in a study conducted by Kumar *et al.* in Jharkhand, which showed all the individuals having leukoplakia, used to chew tobacco.^[13] This shows that consumption of tobacco is the single most important risk factor for oral cancer.

Limitations

As the study is a cross-sectional study, the results can be demonstrated as association and cannot provide evidence for causality. Another limitation is the self-reported rates of tobacco use, as there could be some underreporting of this addictive behavior.

Conclusions

It was very evident that long hours of driving and infrequent shifts played a greater role in acquiring the habit. Behavioral counseling and new laws need to be formed to limit the working hours in drivers to have an effective tobacco control.

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Conflicts of interest

There are no conflicts of interest.

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