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Original Research Article

Prevalence and determinants of tobacco use and oral sub mucous fibrosis in auto-rickshaw drivers at Bareilly, Uttar Pradesh, India

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ABSTRACT

Background: Around 34.6% of Indian population consumes 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 auto-rickshaw drivers.
Methods: This is a cross-sectional study among auto-rickshaw drivers at Bareilly (UP). A total of 450 auto-rickshaw drivers were enrolled in the study, of which 225 auto-rickshaw 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 64.44% of auto-rickshaw 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 auto-rickshaw drivers. 56 (19.31%) auto-rickshaw 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 counselling and new laws need to be formed to limit the working hours in drivers to have an effective tobacco control.

Keywords: Auto-rickshaw drivers, Sub mucous fibrosis, Tobacco use

INTRODUCTION

Chewing tobacco (CT) use is very common in India. Over 90% of the global smokeless tobacco use burden is in South-East Asia and about 100 million people in India and Pakistan use smokeless tobacco.[1,2]

CT in traditional form is consumed as betel quid mixture of areca nut, slaked lime, and flavoring agent wrapped in betel leaf and tobacco commercial preparations (TCPs) such as gutka, zarda, khaini, mishri, etc., contain the pieces of areca nut coated with powdered tobacco, sweetening and flavoring ingredients in addition to other spices such as saffron, cardamom, etc. which are very popular and highly addictive. These TCP are very popular among adults and children as well.[3-6]

Though the government has taken a stand on banning this CT products sale, substitutes such as supari mix packets which contain a mixture of areca nut, lime, spices, and condiments are sold along with a free packet of CT, in the form of zarda or khaini. Since these products are not

banned individually, the user mixes these two products and makes his own gutka. The CT (smokeless tobacco) used in India is mostly of the species Nicotiana rustica which contains higher concentrations of tobacco-specific nitrosamines and hence high carcinogenicity, while most smoking tobacco is Nicotiana tabacum. Sun/air-cured CT in unprocessed, processed, or manufactured form is the cheapest and is used in different parts of India. In most parts of India, it is available as bundles of long strands of leaves or as powdered sticks which can be used with lime, areca nut, or in a betel quid (pan).[7]

The preference of CT over smoking is related to the literacy and income of an individual and varying socio-cultural norm. In India, where smoking by women is still considered a taboo, CT is the preferred choice. Tobacco use causes an array of changes in the oral cavity, from mucosal pigmentation to thickening/ulceration of the epithelium. Oral cancer (OC) and other oral mucosal lesions such as chewers mucositis (CM), frictional keratosis, leukoplakia, and submucous fibrosis (SMF) are strongly associated with tobacco consumption. In comparison to Western populations, in which OC represents about 3% of malignancies, it accounts for over 30% of all cancers in India; this difference can be attributed to regional variation in the prevalence and pattern of tobacco habits, especially CT.[8-11]

The duration of tobacco exposure plays a vital role in mucosal irritation and possibility of malignant transformation in chronic users is increased by multiple folds.[12,13] Though CT associated oral disorders are widespread in India, epidemiological data from various geographical areas is scarce. Hence the present study is undertaken to assess the prevalence of CT use, associated oral lesions among auto-rickshaw drivers at Bareilly (UP).

METHODS

It is a cross-sectional study conducted among the auto-rickshaw drivers of Bareilly (UP). The sample size of 450 auto-rickshaw drivers was calculated using the prevalence of adult tobacco users in India, which was calculated using formula n = 4pq/L2,

Where • P = 47.9 (prevalence of tobacco use in Indian male population)[13]

Q = (100 − P) =52.1

L = Allowable error (10% of P)

n = 4*47.9*52.1/4.7*4.7=435.15

The sample size was rounded off to 450. Half of the sample size, i.e., 225 auto-rickshaw drivers were enquired and screened for oral cancer during daytime (8 am to 8 pm), and remaining half of the auto-rickshaw drivers were enquired and screened in night from 8 pm to 8 am. Of the 225 auto-rickshaw drivers who were questioned during morning and night time, they were selected equally from auto-rickshaw counter from railway station, and bus stand. The auto-rickshaw drivers from railway station, and bus stand were selected using simple random sampling.

The enquiring and screening of auto-rickshaw drivers were done at auto-rickshaw counters because it was feasible to get auto-rickshaw drivers at one place and during the waiting period at the auto-rickshaw 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 were 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 auto-rickshaw driver for more than one year and is a full-time auto-rickshaw driver.

Exclusion criteria

- Persons not willing to participate in the study.

All the auto-rickshaw 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 was calculated using Fagerstrom scale.[14] Updated BG Prasad classification was used to calculate socioeconomic status.[15] All those who were having precancerous lesions or suspicious lesions for cancer were referred to tertiary cancer hospital for further management.

RESULTS

Table 1 show that Out of the 450 auto-rickshaw drivers interviewed, 290 (64.44%) was consuming tobacco in any form. The auto-rickshaw drivers who were 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 was statistically significant at $P < 0.05$. Of the 290 auto-rickshaw drivers who were consume tobacco, 250 (86.21%) of them only chewed tobacco, 15 (05.17%) of them only smoked tobacco, and remaining 25 (08.62%) auto-rickshaw drivers used tobacco in both smoking and smokeless form.

Table 2 shows the level of nicotine dependence in auto-rickshaw using tobacco. Based on the Fagerstrom scale, the tobacco users are classified into four levels of dependence. In our study, we found that 56 (19.30%) auto-rickshaw drivers were having low nicotine dependence, 204 (70.34%) auto-rickshaw drivers were having low to moderate nicotine dependence, 24 (8.26%) auto-rickshaw drivers were having moderate nicotine dependence, and 6 (2.10%) auto-rickshaw drivers were highly dependent on tobacco/nicotine.

Table 1: Age distribution of patients.

Characteristics	Tobacco use		$\chi 2$	df	P
	Yes	No			
Age Group in Years					
18-24	56	65	29.9897	2	p <0.05
25-39	185	62			
40 Years and above	49	33			
Socioeconomic status					
Class III Middle Class	67	37	3.8086	2	p < 0.05
Class IV Lower Middle Class	172	83			
Class V Lower Class	51	40			
Working hours per day					
Less than 6 hours/day	35	39			
6 to 10 hours /day	102	65			
More than 10 hours/day	153	56			
Time of working					
Day time	72	61	11.8561	2	p <0.05
Night time	87	29			
Both Day and Night	131	70			
Any other family member consuming tobacco					
Yes	209	82	19.5595	1	p <0.05
No	81	78			

Table 2: Level of tobacco dependence in auto-rickshaw drivers using Fagerstrom scale.

Fagerstrom scale	Number	Percentage
Low level of nicotine Dependence	56	19.30
Low to moderate level of nicotine dependence	204	70.34
Moderate level of nicotine dependence	24	08.26
High level of nicotine dependence	6	02.10
Total	290	100.00

Table 3 shows the prevalence of precancerous lesion in the oral cavity among auto-rickshaw drivers. Of the 290 tobacco users, 56 (19.31%) auto-rickshaw drivers were detected to have precancerous lesions. None of the nontobacco users had precancerous lesions/oral cancer. Some of the auto-rickshaw drivers had more than one type of precancerous lesion in the oral cavity. Leukoplakia was detected in 22 auto-rickshaw drivers, erythroplakia was detected in 5 auto-rickshaw drivers, Erythroleucoplakia in 4 auto-rickshaw drivers and oral submucous fibrosis was detected in 15 auto-rickshaw drivers.

Table 3: Prevalence of oral precancerous lesion in auto-rickshaw drivers.

Oral precancerous lesion	Number	Percentage
Leukoplakia	22	39.29
Erythroplakia	5	8.93
Leukoplakia with oral Sub mucous fibrosis	7	12.50
Erythroplakia with oral Sub mucous fibrosis	5	8.93
Erythroleucoplakia	4	7.14
Oral sub mucous fibrosis	13	23.21
Total	56	100.00

DISCUSSION

In present study, most of the auto-rickshaw drivers were in the younger age group, i.e., more than 80% of the cab drivers were below the age of 40 years. In our study, 64.44% of auto-rickshaw drivers consumed tobacco in any form. This was much higher than the national average among male population in India (47.9%).[13] This

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.[16]

Around 86.21% of auto-rickshaw drivers consumed only smokeless tobacco in the form of gutka, khaini, and zarda, etc., which is higher than the national average of 23.6%.[13] Only 5.17% of auto-rickshaw drivers consumed only smoked tobacco in the form of cigarette, beedi which is less compared national average of 15%; the reason could be the drivers cannot smoke during driving as the passengers could object to the exposure to the second-hand smoke.[13] Around 8.62 % of the auto-rickshaw drivers consumed tobacco in both smokeless and smoked form which is slightly higher than the national average of 9.3%.[13] Present study showed that higher age group auto-rickshaw drivers consume tobacco more than the younger age group auto-rickshaw drivers. Similar findings were found in the GATS India survey, where the tobacco use was higher in older age groups.[13]

The Fagerstrom scale of < 5 was seen in 260 auto-rickshaw drivers, and 5 and above was seen in 30 auto-rickshaw drivers who were using tobacco. Hence, the moderate to high nicotine dependence was seen in 30 (10.34%) of auto-rickshaw drivers using tobacco, which was higher 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.[17]

56 auto-rickshaw 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.[18] This shows that consumption of tobacco is the single most important risk factor for oral cancer.

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.

CONCLUSION

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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