Original Article

Tobacco use among Auto-rickshaw Drivers in Belagavi City, Karnataka

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Background : Auto-rickshaws are still most commonly used mode of transportation in Tier II & III cities where metros or application-based cab aggregators are non-existent / not available. Auto Rickshaw Drivers (ARD's) are under constant physical and mental pressure due to various socio-economic and occupational factors which lead to various habits majority being tobacco use. Based on very few similar studies it has been found that overall prevalence of tobacco use among ARD's is very high compared to general population. Study was conducted to know prevalence of tobacco use among ARD's in Belagavi, North Karnataka.

Materials and Methods : It was a cross sectional study conducted among 600 regular ARD's operating within Belagavi city between January, 2017 to September, 2017. Sample size was estimated to be 600. Two ARD's who were last in queue were selected from 300 major Auto-rickshaw stands. Participants were interviewed personally after obtaining informed consent and data was collected using the questionnaire customized from Global Adult Tobacco Survey (GATS). Data was analyzed through descriptive statistics, Chi-square test and Fisher's exact test. Study was provided approval by Institutional Ethics Committee.

Results : Mean age of participants was 39.71 ± 11.07 years. Prevalence of tobacco use in any form was found to be 62.17%. Smokeless form was predominant. Tobacco use was significantly associated with age, literacy, type of family, years in present occupation, length of working hours and night shifts.

Conclusion : Prevalence of tobacco use in ARD's is very high compared to general population which calls for immediate focused interventions.

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***Key words* : Auto-rickshaw Drivers (ARDs), Tobacco, Karnataka.**

Editor's Comment :

- Tobacco still continues to be a major public health menace.
- Occupational groups, specially the unorganized sectors bear the brunt of the tobacco use and its health hazard.
- The impact of occupational factors on tobacco use needs to be closely monitored in the community level.

The three-wheel motored vehicles, commonly termed as Auto-rickshaws, are a pillar to urban transportation. Auto-rickshaws continue to be the most commonly commuted mode of transportation in Tier II & III cities where metros or Application-based cab Aggregators (ABCA) have not yet established their foothold. Passengers in Indian cities are served by around 5 million Auto rickshaws and the drivers have to manage through traffic-tangled streets all day for a living. They work for over 10-12 hours per day and form an important part of the urban informal sector in India. These drivers are self-employed and lack any kind of employment benefits and social security. Income insecurity is an important concern for the drivers as they earn on a daily basis with no fixed income. Health expenses are a major challenge for majority of them. They suffer from serious respiratory ailments as they are continuously exposed to vehicular pollution. They are also prone to road accidents given poor road infrastructure and badly maintained vehicles. Traversing on the road for majority of the day, the drivers suffer due to poor quality and lack of access to hygienic water and sanitation facilities further augmenting their health issues.

Auto-rickshaw Drivers (ARDs) are constantly under physical and mental pressure owing to multiple risk factors like lack of regular working hours, frequent up's and down's in fuel cost, unpredictable waiting hours, illiteracy, poverty, lack of proper knowledge about harms of tobacco and other socio-economic factors which lead to various habits majority being tobacco use[1-4].

Tobacco use poses a great burden of disease in India and is a leading public health problem. The tobacco epidemic is one of the largest public health threats the World has ever faced, killing more than 8 million people a year. More than 7 million of these deaths are the results of direct tobacco use while around 1.2 million are the result of non-smokers being exposed to second-hand smoke[5].

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In India, tobacco is used in a varied range of chewing and smoking forms available at varied cost, reflecting the diverse Socio-economic and demographic patterns of tobacco use[6].

Cigarette smoking in any form damages nearly every organ of the body, causes many diseases and deteriorates the health in general[7-8]. It is known to diminish the overall health, increase sickness absenteeism and increased utilization of health care and also increase in the cost[7]. There are many diseases that are caused, increased or exacerbated by tobacco ranging from predisposition to Hypertension, Acute Gastritis, Diabetes Mellitus, Coronary Artery Disease, Stroke, Bronchial Asthma and Cancers to premature death[9].

Author intends to find the prevalence of tobacco consumption among Auto-rickshaw Drivers in Belagavi, a northern district of Karnataka.

Materials and Methods

Study Design :

This study is a descriptive, cross-sectional research conducted on registered Auto-rickshaw Drivers operating in Belagavi city which is a major city in the Northern part of Karnataka, in the period of January to September, 2017. Sample size was calculated to 597 & rounded off to 600 based on the estimated prevalence of 84%[10] with an absolute error of 3%. The inclusion criteria were as follows :

(a) Registered, regular Auto-rickshaw Drivers above 18 years of age in the study area.

(b) Those who were permanent residents of Belagavi city from the past one year.

Auto-rickshaw Drivers driving on a part time basis and those who were not willing to participate were excluded from the study.

Sampling Procedure :

As per the information form the Regional transport office, the city had around 300 major Auto-rickshaw Stands and among each stand two auto rickshaw drivers were selected for the study to meet the sample size. We purposively selected two Auto-rickshaw Drivers who were last in the queue. This was to have ample amount of time for the participant to be interviewed and examined for the study, which could not have been done if someone else from the queue were selected as they may had to discontinue the interview if their Auto-rickshaw was hired during that period.

Study tools :

The questionnaire for the study was customized from the questionnaire of the Global Adult Tobacco Survey (GATS)[11]. This was done to fit the needs of the present study. Some questions related to the occupation and tobacco consumption were added to the original GATS questionnaire to meet the study objectives. Similarly, some other questions from GATS which were not relevant to the study were left out.

Methodology :

Personal interview of eligible participants was conducted by the investigator, using pre-designed and pre-tested questionnaire adopted from GATS questionnaire[11]. Data regarding Socio-demographic variables like age, address, educational status, years in present occupation, Socio-economic status and etc. were collected.

Visits were made by the investigator to all the 300 major Auto-rickshaw Stands within the limits of Belagavi City Corporation and Auto-rickshaw Drivers were identified according to the sampling procedure. These Auto-rickshaw Drivers were explained about the purpose of the study and after getting their written informed consent, they were interviewed and examined in the auto rickshaw stands or any convenient place nearby.

The participants were given free chance to discontinue from the study at any given point of time for any privacy or confidential issues or work related issues. It was ensured that the study participants did not face any kind hindrance in their work.

Data Analysis :

The data was analyzed through descriptive statistics, Chi-square test and Fisher's exact test using the SPSS software. A value of $P<0.05$ was considered statistically significant in the study.

Ethical Considerations :

This research project was provided approval by the Institutional Ethics Committee of J N Medical College, KLE University, Belagavi. Users of any form of tobacco were counselled regarding benefits of tobacco cessation after completion of the study and those willing to quit were offered help either by counselling or by attending tobacco cessation clinics. Those who had lack of awareness or were misinformed about the hazards of tobacco were given the correct information by inter-personal communication by the investigator.

Results

Table 1 shows that all participants were male, age ranging between 18 to 70 years of age with an average age of 39.71 ± 11.07 years. Mean number of years in the present occupation was 15.80 years ± 10.11 years. Study participants worked over a mean length of 9.43 ± 1.82 hours per day.

Majority of the participants (89.83%) were married, 371 (61.83%) stayed in nuclear families and 346 (57.67%) resided in pucca house.

Fig 1 shows that among the participants, 373 (62.17%) were using tobacco in one or the other form.

Cigarettes (87.05%) were the most commonly smoked form followed only by beedis while gutkha (54.93%) was the commonest smokeless form followed by chewing tobacco (30.99%), lime with tobacco (12.32%) and other chewable forms. Majority of the tobacco users had initiated their habit before 20 years of age (46.38%) highlighting the need for interventions at an early age. Mean age at initiation was 23.22 ± 8 years for smoke form and 23.36 ± 7.99 years for smokeless form. Mean duration of use of tobacco was 15.31 ± 10.29 years. More than half of the participants (54.96%) used tobacco within an hour of waking up. Close to three fourths of tobacco users never used in front of their children (74.8%).

Most of the users (54.69%) were advised to quit by a Health Care Professional in the last one year. Among the tobacco users, 227 (60.86%) tried to quit use in the previous year and more than half of them (54.63%) could sustain their efforts for few months before resuming the use. Self-motivation / own will (90.75%) was the strongest driving force to quit. Majority of the tobacco users planned to quit within next one month (28.69%).

Table 1 — Socio-demographic and occupational profile of participants (N=600)

Characteristics		N (%)
Age (years)	< 30	159 (26.5)
	31 – 40	175 (29.17)
	41 – 50	164 (27.33)
	51 – 60	90 (15)
	> 60	12 (2)
Religion	Hindu	143 (23.83)
	Muslim	457 (76.17)
Educational qualification	Illiterate	49 (8.17)
	Primary School	141 (23.5)
	High School	327 (54.5)
	Pre university college	59 (9.83)
	Diploma / Graduate	24 (4)
Socioeconomic status (Modified BG Prasad SES Scale)	Class I	17 (2.83)
	Class II	65 (10.83)
	Class III	196 (32.67)
	Class IV	265 (44.17)
	Class V	57 (9.5)
Number of years in the present occupation	< 10	235 (39.17)
	11 – 20	189 (31.5)
	> 20	176 (29.33)
Length of working hours on an usual day	6 - 8 hours	51 (8.5)
	8 - 10 hours	218 (36.33)
	10 - 12 hours	191 (31.83)
	≥ 12 hours	140 (23.34)
Usual number of night shifts per week	0	582 (97)
	≥ 1	18 (3)

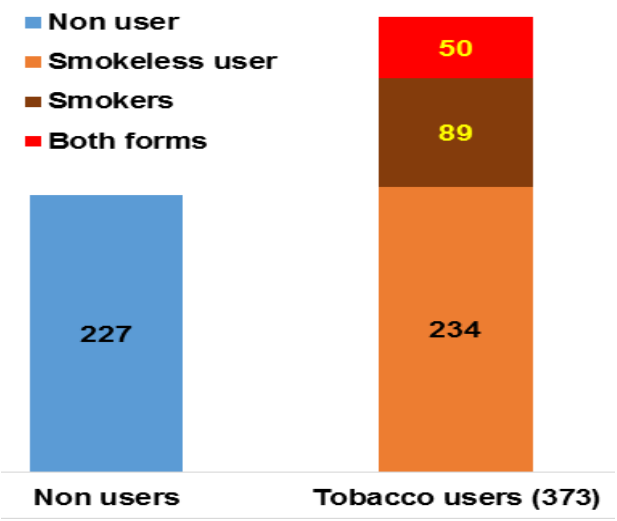

Fig 1 — Distribution of study participants according to use of tobacco

Table 2 shows that among the Socio-demographic factors considered, age and educational status were significantly associated with tobacco usage whereas religion and Socio-economic status had no significant association.

While type of family was significantly associated (Fisher's Exact Test, P value = 0.0456), marital status had no association (Chi-square value = 3.7173, df = 1, P value = 0.053).

Table 3 shows there was a significant association of tobacco use with all the three occupational factors considered ie, length of the work hours, number of years in current occupation and number of night shifts in an usual week.

Discussion

Auto-rickshaw Drivers spend a considerable amount of time in an environment full of pollutant gases, noise, continuous stress, accelerations and decelerations, lateral swaying from side to side and whole-body up and down vibrations when the vehicle is in motion. Further poor lifestyle practices like irregularity of meals, no proper rest rooms, awful quality of sanitary toilets, bad posture while driving and stressful occupational conditions during their working hours augment their health problems. Such working parameters may be associated with various gastro-intestinal disturbances, musculo-skeletal, cardio-vascular, respiratory, hearing and other problems[2,4,12-13].

The present study was done to find the prevalence

of tobacco among Auto-rickshaw Drivers. All the 600 study participants were male, consistent with other studies conducted among similar sub groups[10,14]. Most of the participants in this study had high school education (54.50%), followed by primary education (23.50%) whereas some were illiterate (08.17%). Study participants had a higher educational level when compared with similar studies[10]. This increase in education level in the present study may be attributed to better literacy level among south India as compared to the north.

Most of the study participants stayed in pucca houses (57.67%) and remaining in kuccha houses (42.33%). This was noteworthy as substantial number of participants stayed in kuccha houses which are known to be a risk factor for a range of health problems and the burden will only increase among those also using tobacco.

Mean years in present occupation was 15.80 years ± 10.11. This is because most of the participants started the present occupation in their early twenties (and as the mean age was in late thirties). Study conducted among Auto-rickshaw Drivers in Nagpur had participants with a mean length of occupation of 17.70 ± 7.62 years[14]. Mean length of working hours per day was 9.43 ± 1.82 hours in the present study whereas in the study done in Nagpur it was 11.52 ± 2.29 hours[14].

Hardly 3.0% of participants did one or more than one night shifts per week. On the other hand, study done in Gwalior had 26.0% participants working till late night[10]. This may be because the data collection for the present study was done during day times due to which a good number of drivers driving exclusively in night shifts would have been missed.

Prevalence of tobacco use in the present study in any form was found to be 62.17%. The study among Auto-rickshaw Drivers in Gwalior showed prevalence of tobacco to be 84.26%[10] whereas 64.44% of the Auto-rickshaw Drivers surveyed in a study done in Bareily, Uttar Pradesh consumed tobacco in any form[15] while 69% of auto rickshaw drivers surveyed in another study done in South Delhi were using tobacco in or the other form[16]. The difference in prevalence of tobacco use with Gwalior study can be attributed to the fact that the educational levels of the participants in the present study was high in comparison to the study conducted in Gwalior and both the studies have revealed negative associations between educational level and tobacco use. A study done in Jaipur, Rajasthan concluded that the prevalence of tobacco use was 87.2% among Auto-rickshaw Drivers which was comparatively higher[17]. But a comparison with this study was less valid as

Table 2 — Association of tobacco use with socio-demographic profile

Characteristics		Tobacco users	Non users	Total	χ^2
Association of tobacco use with age	< 30 years	104 (65.41)	55 (34.59)	**159 (100)**	34.39, df = 3, *P* value < 0.00001
	31 – 40 years	133 (76.00)	42 (24.00)	**175 (100)**	
	41 – 50 years	93 (56.71)	71 (43.29)	**164 (100)**	
	> 50 years	43 (42.16)	59 (57.84)	**102 (100)**	
	Total	**373 (62.17)**	**227 (37.83)**	**600 (100)**	
Association of tobacco use with religion	Hindu	88 (61.54)	55 (38.46)	**143 (100)**	0.032, df = 1, *P* value = 0.858
	Muslim	285 (62.36)	172 (37.64)	**457 (100)**	
	Total	**373 (62.17)**	**227 (37.83)**	**600 (100)**	
Association of tobacco use with educational status	Illiterate	37 (75.51)	12 (24.49)	**49 (100)**	27.901, df = 4, *P* value = 0.00001
	Primary	80 (56.74)	61 (43.26)	**141 (100)**	
	High school	221 (67.58)	106 (32.42)	**327 (100)**	
	PUC	29 (49.15)	30 (50.85)	**59 (100)**	
	Diploma & graduate	06 (25.00)	18 (75.00)	**24 (100)**	
	Total	**373 (62.17)**	**227 (37.83)**	**600 (100)**	
Association of tobacco use with Socio-economic status	Class I	12 (70.59)	05 (29.41)	**17 (100)**	4.535, df = 4, *P* value = 0.3384
	Class II	45 (69.23)	20 (30.77)	**65 (100)**	
	Class III	125 (63.78)	71 (36.22)	**196 (100)**	
	Class IV	161 (60.75)	104 (39.25)	**265 (100)**	
	Class V	30 (63.83)	27 (47.37)	**57 (100)**	
	Total	**373 (62.17)**	**227 (37.83)**	**600 (100)**	

Table 3 — Association of tobacco use with occupational profile

Characteristics		Tobacco users	Non users	Total	χ^2
Association between tobacco use and years in present occupation	< 10 years	160 (68.09)	75 (31.91)	**235 (100)**	8.524, df = 2, *P* value = 0.0140
	11 to 20 years	118 (62.43)	71 (37.57)	**189 (100)**	
	> 20 years	95 (53.98)	81 (46.02)	**176 (100)**	
	Total	**373 (62.17)**	**227 (37.83)**	**600 (100)**	
Association between tobacco use and length of working hours	6 - 8 hours	22 (43.14)	29 (56.86)	**51 (100)**	27.901, df = 4, *P* value = 0.00001
	8 - 10 hours	175 (80.28)	43 (19.72)	**218 (100)**	
	10 - 12 hours	83 (43.46)	108 (56.54)	**191 (100)**	
	> 12 hours	93 (66.43)	47 (33.57)	**140 (100)**	
	Total	**373 (62.17)**	**227 (37.83)**	**600 (100)**	
Association between tobacco use and number of night shifts per week	No night shifts	355 (61)	227 (39)	**582 (100)**	Fisher's Exact Test, p = 0.0456
	≥ 1 night shifts	18 (100)	0	**18 (100)**	
	Total	**373 (62.17)**	**227 (37.83)**	**600 (100)**	

this study had a very small sample size of only 94 participants. The prevalence of tobacco use in Auto-rickshaw Drivers revealed by these studies was comparatively very high with respect to the prevalence in Indian adults aged 15 years and above which was just 28.6% according to GATS 16 -17[18]. It was also noted that the prevalence of tobacco use in present study was very high compared to the adults among general population in Belgaum city. A community based study done among adults in Belgaum revealed the prevalence of ever use of tobacco to be only 29.41%[19].

The comparatively higher prevalence of tobacco among Auto-rickshaw Drivers can be attributed to various occupational factors like constant physical and mental pressure due to irregular shifts, continuous variation in fuel prices, long waiting hours coupled with low levels of education, poverty, lack of knowledge about hazards of tobacco, other Socio-economic factors and many unknown factors.

Smokeless form was the predominant form of tobacco use. Similar findings have been observed in several studies conducted among same subgroups[10,20-21]. These findings are consistent with the GATS survey done among adult Indian male[18]. This is also particularly true in Auto-rickshaw Drivers as their hands are pre-occupied in driving and hence smoking while driving would be cumbersome whereas chewing can be continued even while driving.

Mean age at initiation in present study for any form of tobacco was in mid-twenties (23.22 ± 8.00 years for smoke and 23.36 ± 7.99 years for smokeless form). Many other studies also showed initiation of most of the participants at an early age[17&22]. These observations indicate towards initiation of tobacco at a very tender age at which their minds are very much inquisitive, outwardly try for new experiments, amenable to the peer pressures and deeply impacted by use of tobacco in close contacts, media and mass advertisements. In the present study, mean duration of tobacco use was 15.31 ± 10.29 years. Similarly, the average duration of tobacco smoking was 19.04 ± 7.27 years in the Nagpur study[14]. It is a known fact that tobacco is an addictive substance and this duration of tobacco use will only increase in the coming years unless some effective intervention measures are undertaken immediately.

Dependence on tobacco for physiological processes like bowel evacuation was observed in the present study by the fact that more than half of those using tobacco used it within an hour of waking up and other similar studies showed same results and this has to be curtailed off with various de-addiction measures at the earliest. More than 1/4th of the study participants were using tobacco in front of their children & this has to be curtailed off as parents are one of the most important influencers for their children.

Majority (54.69%) of the tobacco users were advised to quit tobacco by any health care provider in last one year. There is still a lot of potential to counsel each & every tobacco user every time they encounter a health care professional which can have a deeper impact in reducing the use.

Around 61% of the study participants had tried to quit the use of tobacco in last one year. In the study done in Nepal, 75.8% of long route bus drivers had tried quitting the use of tobacco[23] whereas in the Gwalior study, only 28.47% had tried to quit the use of tobacco[10]. This difference in quit attempts can be attributed to the difference in various Socio-economic factors, educational level, knowledge regarding hazards of tobacco and the personality traits of the tobacco users as all of these play an important role to quit tobacco. Majority of those who attempted a quit could hardly sustain it for few months before resuming the use. This can be attributed to various religious events (like Ramadan, Diwali), strong peer pressure, addiction and physical dependence to tobacco along with ignorance. Self-motivation or strong will was found to be the most common approach (90.75%) by the participants to even attempt quitting. This own will can be augmented by providing education and raising the level of knowledge about tobacco and its hazards, providing emotional and mental support to those willing to quit. A Canadian study concluded that many smokers may be unaware of effective cessation methods and most also underestimate their benefit. Further, this lack of knowledge about effective cessation methods may represent a significant barrier to treatment adoption[24].

Age of the participants was significantly associated with tobacco use, ie, tobacco use was highly prevalent in younger age group compared to older age. This could be due to reasons like curiosity, increased tendency for experimentation, considering tobacco as a sign of manhood, impact of mass media and movies, friends and fellow Auto-rickshaw Drivers.

There was a statistically significant association between educational status and tobacco use (ie, the tobacco use decreased with increase in educational status). This was consistent with Gwalior study (P=0.0014) and secondary analysis of GATS 09-10[25]. This could be because of the reason that illiterates hardly have any knowledge regarding tobacco and its adverse effects and adding to it is their ignorant attitude about the same.

The study demonstrated a statistically significant

inverse association between years in present occupation and tobacco use ie, tobacco use decreased with increase in present occupation. This could be because younger age group had higher prevalence of tobacco.

Tobacco use was significantly associated with length of working hours per day and night shifts. Similar findings were seen in Gwalior study[10]. This reiterates a well-known fact that long working hours and night shifts lead to increased tobacco consumption which is usually because of longer waiting hours and boredom during waiting hours.

Conclusion

Prevalence of tobacco use among Auto-rickshaw Drivers was 62.17% which is very high compared to general adult Indian population (28.6%)[18].

Limitations and Recommendations :

Apart from recall bias, those auto rickshaw drivers plying exclusively during night might have been missed from the study. Based on the study, we recommend that work place tobacco cessation model should be established for this group and tobacco cessation activities should be targeted at younger Auto-rickshaw Drivers to address the early initiators to prevent future addictions & health hazards. Periodic examination of the Auto-rickshaw Drivers should be conducted to identify risk factors and complications of long term exposure to initiate early preventive and control measures.

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