



# Non-Communicable Diseases Risk Profile of Bus Drivers in Rural Maharashtra: An Exploratory Comparative Study

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## ABSTRACT

**Introduction:** For effective control of non-communicable disease (NCD) focus on high-risk group is economic but identification of such groups and their specific risks is important. Literature from high income countries suggests bus-driver is one such group but specific risk factors might be different for developing countries. Understanding these risks will be helpful to plan preventive interventions for NCDs.

**Method:** it was an exploratory comparative study 178 drivers and 184 non-drivers from same state transport depot in rural area and a self-filled questionnaire was tool for data collection.

**Results:** prevalence of tobacco use was significantly higher among bus drivers (79.8%) compared to non-drivers (46.7%) and drivers were chewing tobacco for longer duration and also seem to be more addicted. Only 19.7% of drivers do any type of regular exercise whereas 41.3% of non-drivers do it. There was no significant difference in self-reported alcohol consumption in terms of quantity or frequency.

**Conclusion:** Some risk factors like tobacco use, night-shifts and lack of exercise are higher among drivers. Public transport drivers can be target for group interventions for tobacco deaddiction and NCD control due to organized nature of this group.

**Key words:** Non-communicable disease risk factors, drivers, tobacco, group-intervention

## INTRODUCTION

Occupation and work culture has influence on life-style and related risk factors for non-communicable diseases (NCDs). Identifying such occupations with higher risk is important for group-interventions especially for middle income countries like India where NCD prevalence is increasing sharply<sup>1</sup> and population level primordial interventions are costly. In these countries the burden due to NCDs is increasing among the lower socio-economic strata.<sup>2,3</sup>

Studies from high income countries hints that heavy motor vehicle drivers like bus drivers, are at higher risk for NCDs.<sup>4-9</sup> Studies from industrialized countries also discuss effects of NCDs on sickness-absenteeism, medical reimbursements

and overall economic loss.<sup>10</sup> But such analysis is not possible in India as there is no effective integrated health information systems. Unlike industrialized countries work culture, food habits, purchase capacity, addictions and addiction levels are far different in India making it difficult to know the attributable risks for NCDs among drivers. It is not yet established in India if bus drivers are at higher risk for NCDs. There are neither conclusive comparative studies nor any health registry for occupational domains.

There is no clear idea about the life style impact and NCD risks of this occupation in India. This study intends to comparatively analyse the prevalence of NCD risk factors among bus drivers and non-drivers to understand the risk factors in this region.

**METHODOLOGY**

This is a cross-sectional comparative study conducted in Latur district bus depot of Maharashtra State Road Transport Corporation- MSRTC with drivers as exposed group (n= 178) and other workers from the same depot as unexposed (n= 184) excluding bus-conductors as there are many confounders associated with them. Self-filled questionnaire in vernacular language was used as tool for data collection which was pre-tested. Out of 233 drivers 213 were approached with an intension to cover almost all the drivers, 195 participated and 178 responses were completely filled. Out of 383 non-drivers (which included- office, maintenance, workshop and security staff) 250 were approached using stratified random sampling ensuring participation from all other types of non-driver jobs in the depot and 184 were the complete forms. Women staffs were excluded from non-exposed group as exposed group had only men and women were mainly in one department only. The study was approved by institutional ethics committee of Sree Chitra Tirunal Institute of Medical Sciences and Technology and Informed consent was taken from the participants. Also permission was taken from the depot authorities.

**RESULTS**

There was no significant difference statistically among both the groups in mean experience years, socio-economic strata and mean age hence these

two groups were comparable.

**Job related factors:** Most of the drivers need to do night-shifts where as in other group very few people had a job which needed night-shifts. In last month 66.3 % (n=118) drivers did nightshifts compared to 17.4% (n=32) non-drivers. Most of the drivers needed to go for night shifts at least for one to two weeks in a month in this depot.

**Life-style related factors:** Table 1 indicates major life-style related factors associated with NCDs. There is no significant difference in self-reported alcohol consumption in the groups.

There was significant difference between the two occupational groups in doing any form of exercise with the percentage of non-drivers (41.3%) doing regular exercise was twice that of the drivers (19.7%) but among exercise doers there was no significant difference in mean duration of exercise. This indicates once a driver adopts exercise, they are likely to do it for similar duration as that of others.

Among drivers the percentage of the people using tobacco currently was significantly higher (79.8%) as compared to non-drivers (46.7%). Chewable tobacco is most favoured form in both the groups.

It is clear from table-2 that among the drivers those who chew tobacco, 62.9 % chew tobacco for more than 1 hr per day as compared to 43.6 % that of the non-drivers and this difference was statistically significant.

**Table 1: Variables on behavioral characteristics of the study sample**

Variable name	Drivers (n=178)(%)	Non-drivers (n=184) (%)	Overall (n=362) (%)	p value
Alcohol consumers	43 (24.2)	35 (19.0)	78 (21.5)	0.115
Mean quantity of alcohol (quarters/wk), mean (SD)	1.88 (0.88 - 2.88)	2.94(-0.23 - 6.11)	2.35(0.05- 4.65)	0.060*
Exercise doers	35 (19.7)	76 (41.3)	111 (30.7)	<0.001
Mean duration of exercise (min/day), mean (SD)	30.14(17.24 - 43.04)	34.74(15.83-53.65)	33.29(16.00 - 50.58)	0.142†
Current tobacco users	142 (79.8)	86 (46.7)	228 (63)	<0.001

Source: Primary study; \*- Analysis is done only for people who consume alcohol in respective groups. †-Analysis is done only for tobacco users in respective groups.

**Table 2: Tobacco consumption pattern**

Variable name	Drivers (%)	Non-drivers (%)	Overall (%)	p value
<b>Total duration-chewing tobacco/day*(n)</b>	<b>135</b>	<b>78</b>	<b>13</b>	
Up to 10 min	5 (3.7)	16 (20.5)	21 (9.9)	0.001
11 to 30 min	11 (8.1)	10 (12.8)	21 (9.9)	
31 to 60 min	34 (25.2)	18 (23.1)	52 (24.4)	
1 to 2 hrs	38 (28.1)	15 (19.2)	53 (24.9)	
More than 2 hrs	47(34.8)	19 (24.4)	65 (31.0)	
<b>Time to first tobacco use after waking up †(n)</b>	<b>142</b>	<b>86</b>	<b>228</b>	
within 5 min	76 (53.5)	38 (44.2)	114 (50.0)	0.271
Within 6to30 min	26 (18.3)	13 (15.1)	39 (17.1)	
within31 to 60 min	8 (5.6)	6 (7.0)	14 (6.1)	
more than 60 min	32 (22.5)	29 (33.7)	61 (26.8)	

Source: Primary study. \*- Analysis is done only for people who chew tobacco in respective groups. †-Analysis is done only for tobacco users in respective groups.

It implies that not only the percentage of drivers consuming tobacco was more but also among tobacco consumers, the drivers were chewing it for longer duration.

The time to first use of tobacco after getting up is correlated with tobacco addiction.<sup>19, 20</sup> Shorter is the time higher is the addiction. Among the tobacco users from both the groups, no significant difference was found between these timings. The actual percentage of drivers which are dependant and need tobacco soon after getting up is quite high (53.5%) compared to non-drivers (44.2%).

There are no risk-ratios calculated as outcome of risk factors that (disease prevalence) is not assessed in the study.

## DISCUSSION

Most of the risk factors were higher among bus drivers and many of which are related to their profession in some or the other way. Another study in Korea finds that there is higher risk among bus drivers for cardio-vascular diseases.<sup>11</sup> where as a study in Kerala indicates higher prevalence of hypertension among bus drivers (41.3%).<sup>12</sup>

Night shifts are associated with sleep disturbance, obesity and sleep related respiratory disorders, day time sleepiness, hypertension, dyslipidaemia, sedentary life style.<sup>13-18</sup> Drivers are doing nightshifts not continuously but periodically which is suspected to be more harmful<sup>18</sup> for circadian rhythm and can increase the risk for hypertension, cardio-vascular diseases and musculoskeletal problems.<sup>19</sup> Long haul drivers are known to have deprived of quality sleep.<sup>13,20,21</sup> In case of drivers, nightshifts also seem to be leading to more use of tobacco by drivers and it was also found in a study that drivers use tobacco for coping with sleepiness and job related stress.<sup>13,22</sup>

In 2009-10, people within 13 to 15 years have prevalence of use of any form of tobacco is 19.0 among boys and 8.3 among girls<sup>23</sup> and it is increasing. This prevalence increases once youth enters in professional life. In 2009-10, prevalence of smokeless tobacco use is 32.9 and 18.4 and smoking is 24.3 and 2.9 among men and women respectively older than 15 years.<sup>23</sup> Smokeless form of tobacco is more used, easily available and cheaper in India.<sup>3</sup> Tobacco use is a major challenge for controlling NCDs and this risk factor is increasing in low & middle income countries of the region.<sup>2,5</sup> It is established that tobacco is responsible for cancer, hypertension, dyslipidaemia, cardiovascular disorders. In middle income countries tobacco products are now affordable to more number of people.<sup>2</sup> Apart from other interventions, group inter-

ventions can be easy, cheap and effective provided high risk groups could be identified.<sup>2</sup>

There is tendency among drivers to use tobacco in excess while driving to alleviate boredom and sleepiness<sup>13</sup> as well the work-culture promotes tobacco use informally.<sup>22</sup> In this group the time to first use tobacco after getting up, which indicates dependence level, is suggesting that addiction among drivers is at a higher level and it is assumed that it increases with experience in this profession due to chronicity of tobacco use.<sup>22</sup> This will make it difficult to quit tobacco for them with lesser response to quitting interventions. Hence it will be helpful to have sustained preventive interventions in this group focusing more on new recruit.

Lack of exercise and obesity is associated with HMV and long-haul drivers.<sup>24</sup> Association between driving and obesity is already established in many studies.<sup>4,25</sup> This is mainly because of no timely life-style and on-road food habits which makes it difficult to adopt to a regular and timely exercise pattern.<sup>26</sup> Without good motivation and lack of peer encouragement it is difficult to stick to such life-style.<sup>27,28</sup> Interventions which can change perceived risk, attitude and behaviour will be helpful for drivers to adopt to exercise and health lifestyle.<sup>8,24,26,28,29</sup>

One study in Brazil also hints towards higher prevalence of NCD risk factors among bus drivers.<sup>27</sup> A comparative study in Taiwan hints towards higher stress and stress related markers in bus drivers.<sup>30</sup>

## CONCLUSION

There can be certain occupational groups where prevalence of NCD risk factors are higher like bus drivers which can be ideal for primary prevention interventions which are economic compared to primordial prevention interventions. For drivers in this region, chewable tobacco and lack of exercise are highly prevalent risk factors compared to non-drivers and should be considered for group intervention.

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