

Original Research Article

A cross sectional study on prevalence of hypertension and associated risk factors among bus drivers of Metropolitan Transport Corporation Limited, Chennai

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ABSTRACT

Background: The job of bus driving is not only risky due to probable accidents and incidents but also risky due to probable health risk factors associated with the nature of bus driving. Sedentary work was done by many professional drivers and they were found to be physically inactive during their leisure time which lead to an increase in risk for obesity and hypertension. Therefore, this study was done with the aim to detect the prevalence of hypertension and its associated risk factors among metropolitan transport corporation bus drivers.

Methods: A cross sectional descriptive study was conducted among bus drivers of metropolitan transport corporation Limited, Chennai. The sample size obtained was 422. A multistage sampling method was used. A Validated semi-structured questionnaire containing questions on basic socio demographic particulars, lifestyle factors, past and family history and anthropometric and blood pressure measurement was done and was analyzed using SPSS 21.

Results: The prevalence of hypertension was found to be 49.5%. Smoking was found in 23.2% of the respondents, tobacco and betel nut chewing in 14.7% of the respondents and 45.5% were found to consume alcohol. It was found that as age increases the prevalence of hypertension also increases which was statistically significant ($p=0.001$).

Conclusions: This rampant disease can be prevented and managed through lifestyle modifications and medication therapy. The risk factors may be avoided by maintaining a regular physical activity, focussing on dynamic exercise, having medical checkups.

Keywords: Hypertension, Risk factors, Bus drivers

INTRODUCTION

Wealth of a nation lies in the health of its citizens.¹ The job of bus driving is not only risky due to probable accidents and incidents but also risky due to probable health risk factors associated with the nature of bus driving. Bus driving is considered to be one of the most responsible skilled works as the drivers of the buses are expected to safeguard themselves, the passengers on the bus, the very bus, other men, animals and vehicles on the road and has to maintain the time schedule irrespective of the

difficulties they face. Common health risks of bus drivers include smoking, tobacco use, alcohol consumption, obesity, hypertension, poor eating habits, diet and nutrition.² These health risk factors may diminish the bus drivers' health status unless the drivers resort to preventive and curative measures. Sedentary work was done by many professional drivers and they were found to be physically inactive during their leisure time which lead to an increase in risk for obesity and hypertension which in turn are known risk factors for diabetes.^{3,4} There is a possibility for the formation of adipose tissue in the abdomen of the

drivers as they have to sit continuously over long hours in a day. Excessive body mass index is due to unscheduled diet, consumption of oily snacks, non-vegetarian foods, use of tobacco related items etc. Among various possibilities of risk factors the formation of adipose tissue and excessive body mass index may lead to hypertension, diabetes mellitus and coronary heart disease. Therefore, it is imperative to examine the health risk factors and to see whether the drivers have been driving the vehicle with health risk factors. Therefore, this study was done with the aim to detect the prevalence of hypertension and its associated risk factors among metropolitan transport corporation bus drivers.

METHODS

Study design

A cross sectional descriptive study on the prevalence of hypertension among bus drivers and their associated health risk factors

Study area and population

The study was conducted among bus drivers of Metropolitan Transport Corporation Limited, Chennai. There were 25 bus depots and there were 9514 bus drivers in Metropolitan Transport Corporation Limited Chennai between January 2014 and June 2014

Sample size and sampling method

The sample size obtained was 422 as per singaravel ss et al⁵ calculated based on the assumption of prevalence 50%, Confidence level of 95% and absolute precision of 5%, allowing a 10% of excess sampling to account for non-response rate.⁶ Multistage sampling method was used.

Inclusion and exclusion criteria

Inclusion criteria for current study were all the bus drivers of the 5 bus depots of Chennai Metropolitan Transport Corporation and those who were willing to give consent. Those who were not willing to give consent and not willing to participate were excluded from the study.

Procedure

A validated semi-structured questionnaire containing questions on basic socio demographic particulars, lifestyle factors, past and family history and anthropometric and blood pressure measurement was done. Height and weight were recorded and BMI calculated as per singaravel ss et al study.⁵ Blood pressure: Blood pressure was measured by using the sphygmomanometer, in sitting position, two times over a period of ten minutes and the lowest reading was recorded. Bus drivers with systolic blood pressure of less than 120 mm of Hg and diastolic blood pressure of less than 80 mm of Hg was considered to have normal blood pressure. Bus drivers with systolic blood pressure of 120-

139 mm of Hg and a diastolic blood pressure of 80-90 mm of Hg was considered to be pre-hypertensive. Bus drivers with systolic blood pressure 140-159 mm of Hg and a diastolic blood pressure of 90-99 mm of Hg was considered to be in stage I hypertension. Bus drivers with systolic blood pressure of more than 160 mm of Hg and a diastolic blood pressure of more than 100 mm of Hg was considered to be in stage II hypertension.⁷

Data collection

Official permission from the Managing Director, Metropolitan Transport Corporation Limited, Chennai and the Institutional ethics committee were obtained for the study purpose. Informed consent was obtained from the bus drivers before administering the semi-structured questionnaire in Tamil language. Anthropometric and blood pressure measurement were also recorded in the premises of the bus depot in collaboration with Metropolitan Transport Corporation Limited, Chennai

Outcome variables

Bus drivers with systolic blood pressure 140-159 mm of Hg and a diastolic blood pressure of 90-99 mm of Hg was considered to be in stage I hypertension. Bus drivers with systolic blood pressure of more than 160 mm of Hg and a diastolic blood pressure of more than 100 mm of Hg was considered to be in stage II hypertension.⁷ Prevalence of smoking, Prevalence of tobacco chewing and Prevalence of alcoholism were other outcome variables determined.

Analysis

The data was entered in MS Excel and analyzed by using SPSS Version 21 for analyzing descriptive and inferential statistics, test of statistical significance chi square was applied p value of <0.05 was considered statistically significant

RESULTS

Socio demographic particulars

As per table1, the respondents mean age was 42.32yrs. Smoking was found in 23.2% of the respondents, tobacco and betel nut chewing in 14.7% of the respondents and 45.5% were found to consume alcohol. Regarding dietary pattern majority of the respondents were non vegetarian accounting for 95%. Among the respondents 66.1% ie majority never did any form of exercise. 30.7% of the respondents have slept less than 5 hrs a day. 13.7% of respondents had a past history of hypertension, 13.7% of respondents had a family history of hypertension.

Test of statistical significance

The prevalence of hypertension was found to be 49.5%. From (Table 2) there was a significant association between age and hypertension with a Chisquare value 17.682 and p value of less than 0.001. There was found to be an

association between obesity and hypertension which was found to be statistically significant with a p value of 0.018.

Table 1: Socio demographic particulars, personal habits, past and family history (n=422).

Socio demographic particulars, personal habits, past and family history		N	%
Age (years)	less than 30	25	5.95
	31 to 40	158	37.45
	41 to 50	150	35.5
	Above 50	89	21.1
	Total	422	100.0
Smoking habits	yes	98	23.2
	No	324	76.8
	Total	422	100
Tobacco use	Yes	62	14.7
	No	360	85.3
	Total	422	100.0
Alcohol intake	Yes	192	45.5
	No	230	54.5
	Total	422	100.0
Diet	Vegetarian	21	5
	Non vegetarian	401	95
	Total	422	100.0
Exercise	Yes	143	33.9
	No	279	66.1
	Total	422	100.0
Sleep	5 to 7 hours	240	56.9
	Less than 5 hours	130	30.7
	More than 7 hrs	52	12.4
Past h/o HT	Yes	58	13.7
	No	364	86.3
	Total	422	100.0
Family h/o HT	Yes	58	13.7
	No	364	86.3
	Total	422	100.0
Obesity	Yes	61	14.5
	No	361	85.5
	Total	422	100.0

From the Figure 1 it is found that as age increases the prevalence of hypertension also increases. This trend is statistically significant. This infers that there is an association between age group and the prevalence of hypertension also increases ($p=0.001$). From Table 3 the logistic regression results show that those who had the family history of hypertension had 2.3 times higher risk with a 95% confidence interval between 1.007 to 5.273 for developing hypertension when compared to those who did not have family history of hypertension. This risk is statistically significant ($p=0.048$). From Table 4 it is revealed that obese people have 1.6 times higher risk with 95% confidence interval between 1.083 and 2.351 for developing hypertension when compared to normal people. The logistic regression results show that those who

had family history of hypertension had 2.76 times higher risk with a 95% confidence interval between 1.169 to 6.513 for developing hypertension compared to those who did not have family history of hypertension ($p=0.021$) after adjusting for age, obesity and tobacco use. The obese people have 1.61 times higher risk with 95% confidence interval between 1.073 and 2.439 for having hypertension when compared to normal people ($p=0.022$) after adjusting for age, family history and tobacco use. Those people who use tobacco had 1.54 times the higher risk with 95% confidence interval between 1.004 to 2.367 for having hypertension compared to those who do not use tobacco ($p=0.048$).

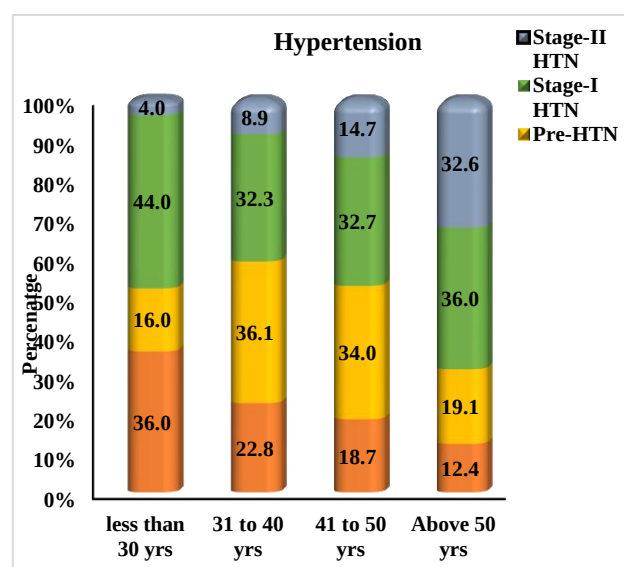


Figure 1: Association between age and hypertension (n=422).

Table 2: Association between hypertension and risk factors (n=422).

Parameters	Chi-Square tests	
	Value	P value
Age	17.628	0.001
Family history	7.781	0.099
Obesity	5.603	0.018
Physical exercise	0.019	0.891
Tobacco use	3.194	0.074
Alcohol usage	1.335	0.248

DISCUSSION

The study was done to find out the prevalence of hypertension and its associated risk factors among the bus drivers of Metropolitan Transport Corporation limited Chennai in the profession of bus driving. In the present study the mean age was 42.32 years, 85.3% of the respondents were not tobacco users, 76.8% were not smokers, 54.5% have not used alcohol 14.5% were obese. Studies have shown that among professional bus drivers there is increased prevalence of hypertension.⁸

Hypertension and stress were related to physical inactivity, poor diet and to physical and mental tiredness.⁹ Proper

maintenance of weight and avoidance of excessive salt intake helps in prevention of hypertension.

Table 3: Unadjusted logistic regression for hypertension (n=422).

Factors		Odds ratios	95% CI for OR		P value
			LL	UL	
Age (years)	less than 30	1.000			
	31 to 40	0.757	0.325	1.765	0.519
	41 to 50	0.974	0.417	2.272	0.951
	Above 50	2.360	0.956	5.824	0.062
Family history	None	1.000			
	HTN	2.304	1.007	5.273	0.048
Obesity	No	1.000			
	Yes	1.595	1.083	2.351	0.018
Tobacco use	No	1.000			
	Yes	1.447	0.964	2.171	0.074

Table 4: Multiple logistic regression for hypertension (n=422).

Factors		Adjusted Odds ratios	95% CI for OR		P value
			LL	UL	
Age (years)	less than 30	1.000			
	31 to 40	0.785	0.325	1.895	0.590
	41 to 50	0.892	0.367	2.168	0.801
	Above 50	2.509	0.975	6.451	0.056
Family history	None	1.000			
	HTN	2.760	1.169	6.513	0.021
Obesity	No	1.000			
	Yes	1.617	1.073	2.439	0.022
Tobacco use	No	1.000			
	Yes	1.542	1.004	2.367	0.048

Kidney problems were related to hypertension.⁹ According to the study of IRT Perundurai medical college and hospital in September 2012, 21.92% were with hypertension, in our study the prevalence was found to be 49.5 % and the prevalence increased as age advanced.¹⁰ The study of Izadi et al in Tharan in 2010 and 2011 of the bus and truck drivers 16.4% were with hypertension. Hypertension was significantly associated with higher levels of body mass index, waist circumference, blood glucose.^{9,11} In a study conducted by Izadi et al the prevalence of hypertension among professional drivers was found to be 16.4%. The prevalence of hypertension increases with age.¹¹ High blood pressure is another risk factor for diabetes among professional bus drivers.¹¹ Further research is needed to explore the linkages between health promotion efforts for individual workers and efforts to improve the organisational physical and social environments at work. Strengthening these linkages could serve to maximize the impact of change within a multi-level program.

CONCLUSION

The analysis and interpretation of the primary data collected revealed the fact that there are health risk factors associated with prevalence of hypertension in the

profession of bus driving. Fortunately, however this rampant disease can be prevented and managed through lifestyle modifications and medication therapy. Weight reduction is considered to be an important preventive and control measure for chronic diseases and also enhances the professional efficiency of the bus drivers. Regular walking of 30 minutes per day is recommended for healthy wellbeing and for preventing various health related risk factors. More leisure time exercise and shortening the length of work hours as among the most important ways to improve their health and work environment to overcome the health risk factors associated with occupational disease. The risk factors may be avoided by maintaining a regular physical activity, focussing on dynamic exercise, having medical checkups, especially checking BP, ECG, blood cholesterol, triglyceride and glucose levels periodically. Besides a strive to get adequate sleep avoid the use of stimulants avoid excessive use of coffee and avoiding late night driving may also reduce the health risk factors. The habit of alcohol intake and smoking to reduce physical and mental stress by drivers to be avoided. On the side of food habits, the drivers may be advised to take a healthy well-balanced diet regularly. They must be sure of taking breakfast, sure of avoiding heavy meals before going to sleep and have to check their weight as a preventive measure. The drivers may be advised to take

short breaks with stretch exercise in order to avoid fatigue. To conclude the lifestyle of bus drivers may be changed by inculcating an educational program to know the importance of preventive measures to have a better health.

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