



A CROSS SECTIONAL STUDY ON HYPERTENSION AND ASSOCIATED RISK FACTORS AMONG BUS DRIVERS AND CONDUCTORS IN KARAİKAL, PUDUCHERRY

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Introduction

The mortality and morbidity by non-communicable diseases is on rise in the past years and is projected to increase to 52 million by 2030. Cardiovascular diseases were the leading cause of death followed by cancers, respiratory diseases and diabetes. The majority of premature deaths (82%), are in low- and middle-income countries. In low- and middle-income countries, a higher proportion (48%) of all NCD deaths are estimated to occur in people under the age of 70 years, compared with high-income countries (28%).¹ Hypertension is undoubtedly, one of the major risk factors for cardiovascular diseases. If left untreated, hypertension may give rise to stroke, coronary heart diseases, dementia and blindness affecting not only the individual but also the community. According to NHFS-4 hypertension is 13.8% in men and 8.8% in women (overall 11.3%) aged 15–49 and 15–54 respectively. Fourth District Level Household Survey reported hypertension in 25.3% with greater prevalence in men (27.4%) than women (20.0%). This translates into 207 million persons (men 112 million, women 95 million) with hypertension in India.² Several risk factors like ageing, genetic factors, physical inactivity, overweight and obesity etc can contribute to the development of hypertension.

According to the NCD prevention committee of WHO, reduction in hypertension can be achieved by early screening and proper treatment. Identifying those at high risk is very crucial. As previous studies have indicated that bus drivers and conductors have increased mortality and morbidity due to cardiovascular diseases.³ Screening for hypertension amongst them is crucial to reduce the morbidity as well as mortality related to hypertension and its complications.

Hence this study was conducted to estimate the prevalence of hypertension amongst male bus drivers and conductors in Karaikal, Puducherry

Methodology

This is a descriptive cross-sectional study conducted among male bus drivers and conductors at the Corporation bus stand of Karaikal from July 2018 to December 2018. It is the main bus stand where buses of SETC, PRTC and Private transport start and end at. This study was conducted as a part of a larger study. For this study, a sample size of 295 was calculated based on the prevalence of hypertension of 41% from previous study, 95% confidence limit, 15% relative precision and 20 % attrition rate. Simple random sampling was used to include the bus drivers and conductors the bus drivers and conductors.

After the institutional ethics committee clearance was obtained, permission from depot managers and private transport managers were obtained. After taking informed consent, data was collected using structured questionnaire by interview method. Sociodemographic details, working patterns including years of driving, timing and conditions of work and personal habits was noted. Blood pressure was measured using manual mercury sphygmomanometer. The study subject was asked to sit comfortably with legs uncrossed for 15 minutes. Two readings of blood pressure were taken 15 minutes apart and average of two readings was considered as blood pressure of study subjects. Those study subjects having blood pressure in pre-hypertensive and hypertensive range were called again after a week and another set of readings was taken. The lower reading among these two visits was taken as blood pressure of study subject.³ Weight was measured to the nearest 0.1 kg using a beam type weighing scale and height was measured to nearest 0.1cm on a vertical surface. BMI was calculated.



Hypertension was HTN was defined as systolic BP of 140mmHg and/or diastolic BP of 90mmHg or current pharmacological treatment for HTN. Pre-HTN was defined as systolic BP 120–139mmHg and/or diastolic BP 80–89mmHg. Isolated systolic HTN was defined as systolic BP 140mmHg in presence of a normal diastolic BP.³ Data was entered in Microsoft Excel sheet and was analysed using SPSS version 18. Descriptive statistic used was mean, standard deviations and proportions. Chi square test was used and $p < 0.05$ was considered statistically significant.

Results: A total of 295 bus drivers and conductors were included in the study. The mean age of study participants was 43 ± 8.5 years (Range 19 to 58). Mean number of years of experience was found to be 14 ± 11.87 years (Range 0 to 35 years). On most days they worked for a mean duration of 11 ± 5.35 hours (Range is 0 to 24 hours). The mean Body Mass Index was found to be 27.34 ± 4.05 (Range is 16.4 to 41.20). Among the study participants, 42% were smokers and 68% were alcoholics. The important socio demographic characteristics are given in Table No. 1.

Table No 1 Socio Demographic Characteristics of Study Participants

Characteristics	Frequency	Percentage
Age in Years		
20	3	1%
21-30	22	7.5%
31-40	95	32.2%
41-50	114	38.6%
51-60	61	20.7%
Total	295	100%
Place of Residence		
Urban	144	48.8%
Rural	151	51.2%
Total	295	100%
Marital Status		
Unmarried	30	10.2%
Married	259	87.8%
Divorce	3	1%
Separate	3	1%
Total	295	100%
SES Class		
Class I	280	94.9%
Class II	11	3.7%
Class III	4	1.4%
Addictions		
Smoking	124 (n =295)	42%
Alcoholic	202 (n = 295)	68.47%



The prevalence of hypertension was found to be 39.66 % and those with elevated BP was found to be 30.5%. Mean systolic BP was found to be 130 ± 17.09 mmHg (Range is 90 to 180) and diastolic BP was 84 ± 10.95 mmHg. Table 2 shows association of certain socio-demographic and occupational characteristics with hypertension.

Significant association was found between age and hypertension. The proportion of hypertension was more in the participants above the age of 35 years. However, there was no association with marital status and years of experience of the participants.

There was higher prevalence of hypertension in individuals with BMI more than 25kg/m^2 . There was significant association between BMI and hypertension ($p= 0.027$). Duration of sleep was also significantly associated with hypertension with higher proportion of hypertension being in the group having less than 6 hours of sleep. There was significant association of hypertension with personal habit of consuming alcohol with high proportion of hypertensive's were found to be in alcoholic group.

Table No 2: Association of Hypertension and Risk Factors among the Study Participants

Risk Factor	Hypertension		Total	Chi Square	P value
	Present	Absent			
Age					
35 years	15	59	74	4.313	0.038
> 35 years	73	148	221		
Marital Status					
Unmarried	6	24	30	1.542	0.214
Married/Divorce	82	183	265		
Years of Experience					
15 years	45	121	166	1.344	0.246
>15 years	43	86	129		
BMI					
25 kg/m^2	14	58	72	4.908	0.027
$>25 \text{ kg/m}^2$	74	149	223		
Duration of Sleep					
6 hours	43	73	116	4.785	0.029
>6 hours	45	134	179		
Smoking					
Smoker	32	94	126	2.066	0.151
Non Smoker	56	113	169		
Consumption of Alcohol					
Alcoholic	48	147	195	7.474	0.006
Non Alcoholic	40	60	100		
Note: For the table hypertensive's and pre hypertensive's are considered as one group					



Discussion

The prevalence of hypertension in our study was 39.66% and that of elevated blood pressure was 30.5%. A study conducted by Bhaskar Rao et al among bus drivers in Andhra Pradesh showed similar prevalence of 30%.⁴ In India the prevalence of hypertension in general population varies between 17% and 21%.⁵ The prevalence of hypertension is higher in bus drivers and conductors as compared to general population. This may be due to the long hours of working, occupational stress, higher BMI and harmful personal habits.

The proportion of hypertension was higher among those aged 35 years or more, having BMI more than 25 kg/m². AL Borle et al conducted study among bus drivers in Nagpur which stated significant trend between age and hypertension.⁶ This may be due to the physiological changes occurring because of ageing of blood vessels leading to risk of hypertension.

Personal habits play an important role in development of non-communicable diseases. Long hours of work and stress can lead to increase in consumption of alcohol and smoking. In our study we found significant association between habit of consuming alcohol and hypertension. However, no association was found between smoking and hypertension. This is in accordance to the study conducted by Arjun Lakshman et al which showed that there was no significant association between smoking and hypertension.⁷ A study conducted by Josphenie L et al showed significant association of hypertension with both smoking and consumption of alcohol.⁸

Conclusion

Our study shows that the prevalence of hypertension is 39.88% than the general population. Increase age, BMI more than 25kg/m², decreased duration of sleep are statistically associated with hypertension. These findings suggest the need to develop interventional measures targeted to reduce the risk as well as periodic screening to decrease the prevalence as well as reduce the complications of hypertension.

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