Prevalence of hypertension and its socio demographic and occupational determinants among bus drivers in North Karnataka – A Cross sectional study

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Abstract

Background: Hypertension is an iceberg disease. It remains silent, being generally asymptomatic during most of its course. The nature of the profession puts bus drivers at risk of developing hypertension. Hence, there is a need to study the prevalence and risk factors associated with hypertension among bus drivers.

Aim: To study the prevalence of hypertension and socio demographic and occupational factors associated with it among bus drivers of north Karnataka.

Methods: Three hundred sixty five randomly selected study participants (Drivers) were interviewed personally by using pre-tested and validated structured questionnaire and detailed information regarding age, educational status, socio-economic status, type of family, marital status were collected. Two independent blood pressure readings were taken in sitting position and the mean value of each is calculated. Study participants with either systolic blood pressure ≥140 mm Hg or diastolic blood pressure ≥90 mm Hg were termed as hypertensive. Participants who were known hypertensive were also included in the study for calculating prevalence of hypertension.

Results: The prevalence of hypertension among drivers was 23.8%. Hypertension was significantly associated with age, socio-economic status, education, religion, duration of service and job satisfaction.

Conclusion: Considering the high prevalence of hypertension among bus drivers, necessary preventive measures need to be promoted.

Keywords : hypertension, bus drivers, socio-demographic factors, occupational factors.

Introduction

Hypertension represents one of the most formidable dilemma, the world has faced in modern times. It is an ubiquitous disorder. The importance of this chronic condition needs no emphasis due to its role in causation of coronary heart disease, stroke and other vascular complications. It is one of the major risk factors for cardiovascular mortality, which accounts for 20-50% of all deaths [1]. Hypertension is an interesting disease entity of its own. It remains silent, being generally asymptomatic, during most of its clinical course. The disease does immense harm to the body in the form of "target organ" (end organ) damage. Hence it has been given the term "silent killer[2]. Bus drivers are at a risk of developing hypertension due to nature of their profession. Stressors for developing hypertension in bus drivers include rotating shift pattern, inflexible running times and traffic. Adhering to the schedule, providing service to passengers and driving safely are among the most important psychosocial demands of the bus driver's job. Once they develop hypertension, they are prone to develop coronary heart disease and stroke putting them and their road users at risk. Hence there is need to assess the prevalence of hypertension among bus drivers. It was because of importance of hypertension, coupled with lack of community based studies in these subjects i.e. bus drivers that prompted us to take up the present study.

Aims and Objectives

1) To study the prevalence of hypertension among drivers

2) To study the socio-demographic and occupational factors associated with it.

Materials and methods

The present study is a cross sectional study undertaken to know the prevalence of hypertension among bus drivers in Belgaum, Karnataka. The study was conducted at three bus depots in Belgaum for the period of one year.

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Sample size

Since the prevalence of hypertension among bus drivers is not known, to calculate the sample size, the prevalence was supposed to be 50% and with a 10% relative error of prevalence. The sample size arrived at was 400. All the drivers enrolled in 3 depots were numbered and 400 drivers were selected at random by using 4 digits random number table. However 365 drivers gave their consent to participate in a study and a non acceptance rate of 8.75% was noted.

All the study participants were interviewed personally by using pre-tested and validated structured questionnaire and detailed information regarding age, educational status, socio-economic status, type of family, marital status and occupational factors was collected. In the present study, socio-economic status was classified according to modified B.G.Prasad classification[3,4,5]. The instruments used in this study included a mercury sphygmomanometer and stethoscope. These instruments and technique were initially standardized during the pilot study and were regularly standardized throughout the period of data collection.

Blood pressure was measured using mercury sphygmomanometer by auscultatory method. The participant was first asked to sit quietly and comfortably on a chair with back supported for about five minutes in a quiet room. Two readings of systolic blood pressure (SBP) and diastolic blood pressure (DBP) were taken and recorded at an interval of at least 10 minutes and the mean value for each is calculated. Study participants with either systolic blood pressure $\geq$ 140 mm Hg or diastolic blood pressure $\geq$90 mm Hg were termed as hypertensive as per the latest definition criteria [6,7]. Participants who were known hypertensive were also included in the study for calculating prevalence of hypertension.

Statistical analysis

Statistical analysis was done using SPSS version 10 software. Summary figures like rates, percentage were calculated. Chi square test was used to test the association between hypertension and varioussocio-demographic and occupational risk factors.

Results

The study participants comprised of bus drivers of 3 depots of Belgaum division and all of them were males. Out of 400 drivers selected randomly, 365 gave their consent to participate in this study. Majority (36.7%) of the study participants were belonging to 40 – 49 year age group. All the study participants were literates and only 5.2% were graduates. 81.1% of them were Hindus and 91.8% were from nuclear family. Most of the participants (41.9%) were belonging to class II socio-economic status according to modified B. G. Prasad classification [3,4,5]. (Table 1).

Table1. Sociodemographic profile of study participants.

Particulars	Total Participants N=365(%)
Age in years	
20 – 29	55(15.1)
30 – 39	123(33.7)
40 – 49	134(36.7)
>50	53(14.5)
Education	
Primary	139(38.1)
Secondary	148(40.5)
PUC(12th std)/ Diploma	59(16.2)
Graduate	19(5.2)
Religion	
Hindu	296(81.1)
Muslim	68(18.6)
Christian	1(0.3)
Socio-economic Status	
Class I	11(3.0)
Class II	153(41.9)
Class III	99(27.1)
Class IV	97(26.6)
Class V	5(1.4)
Type of Family	
Nuclear	335(91.8)
Joint	23(6.3)
Three Generation	7(1.9)

The present study showed that, 87(23.8%) drivers were hypertensive. Majority of them (59.8%) were having mild hypertension and only 10 (11.5%) were having normal blood pressure because of regular treatment **(**Table 2a**)**. Out of 87 hypertensive drivers, only 26 (29.9%) gave past history of hypertension. The highlight of the present study is that, 70.1% of hypertensive drivers were newly diagnosed as hypertensive and they were not aware of their hypertensive status **(**Table 2b**)**.

Table 2 (a). Distribution of hypertensives according to their level of blood pressure

Category	Drivers	
	No.	%
I] **Mild hypertension**: (SBP 140-180 mmHg or DBP 90-105 mmHg)	52	59.8
Sub-group: i) Borderline (SBP 140-160 mmHg or DBP 90-95 mmHg) ii) Higher than borderline (SBP >160-180 mmHg or DBP >95-105 mmHg)	22 30	25.3 34.5
II] **Moderate and severe hypertension** (SBP >180 mmHg or DBP >105 mmHg)	6	6.9
III] **Isolated systolic hypertension** (SBP >140 mHg and DBP <90 mmHg)	19	21.8
Total	77	88.5
Hypertensive with normal blood pressure because of regular treatment	10	11.5
Total	87	100

Table2 (b). Distribution of hypertensives according to past history of hypertension.

Past history of Hypertension	Drivers	
	No.	%
Present	26	29.9
Absent	61	70.1
Total	87	100.0

This study has also showed that, there was statistically significant association between hypertension and age, socio-economic status, education, religion, duration of service and job satisfaction **(**Table 3 and Table 4**)**. However, there was no significant association found between hypertension and the type of family (2=0.954; df=2; p=0.621).

Table 3. Association between hypertension and socio-demographic factors among study participants

Particulars	Total Participants (N=365)	Total Hypertensives N=87(%)
Age Group (in years)		
20-29	55	0(0)
30-39	123	17(13.8)
40-49	134	41(30.5)
≥50	53	29(54.7)
	$\chi 2 = 51.224$; df = 2 ; p< 0.001	
Socio-Economic status		
Class I	11	5(45.5)
Class II	153	56(36.6)
Class III	99	21(21.2)
Class IV	97	5(5.1)
Class V	5	0(0)
	$\chi 2 = 37.083$; df = 3; p < 0.001	
Educational status		
Primary	139	56(40.3)
Secondary	148	23(15.5)
PUC/ Diploma	59	08(13.5)
Graduate	19	00(0)
	$\chi 2 = 34.256$; df = 2; p < 0.001	
Religion		
Hindus	296	64(21.6)
Muslims	\68	22(32.3)
Christians	1	1(100.0)
	$\chi 2 = 4.228$; df = 1; p = 0.040	

NOTE:
For analysis following rows have been combined:
1. In age group, row 3(40-49 yrs group) and row 4(>50yrs group)
2. In socioeconomic status, row 4(class IV) and row 5(Class V)
3. In educational status, row 3(PUC/Diploma) and row 4 (Graduates)
4. In religion, row 2(Muslims)and row 3(Christians)

Discussion

In the present study, the prevalence of hypertension among drivers was found to be 23.8%. A study conducted by Nasri H et al [8] showed that the prevalence of hypertension among bus drivers was 23.2% which is comparable with the results of our study. Another study conducted by Reddy SS et al[9] showed hypertension prevalence to be 8.6% among urban general population, which is very less compared to our study.

Our study showed that the prevalence of hypertension increased with increase in age and was highest in those who were more than 50 years (54.7%) This association between hypertension and age was found to be statistically significant (p<0.000). These findings compare well with results observed by Reddy SS et al [9] Todkar SS et al[10], Sadhukhan SK et al[11] Bagchi SC et al[12], Khadilkar HA [13]

Table 4. Association between hypertension and occupational factors among study participants

Particulars	Total Participants N=365	Total Hypertensive N=87(%)
Duration of service (in years)		
1 10	177	13(7.3)
11 20	116	38(32.7)
21 30	65	31(47.7)
>30	7	5(71.4)
	2 = 60.714 ; df = 3 ; p < 0.001	
Job satisfaction		
Satisfied	313	51(16.3)
Dissatisfied	14	8(57.1)
Neutral	38	28(73.7)
	2 = 70.374 ; df = 2 ; p < 0.001	

Gupta SP et al (1977) [14] Gupta SP et al (1978) [15], Sharma BK et al [16] Joshi PP et al [17] which showed increased prevalence of hypertension with increase in age.

In the present study the prevalence of hypertension was found to be 45.5% among drivers belonging to class I according to modified B.G.Prasad's classification [3,4,5]and steadily decreased to 5.1% among drivers belonging to class IV. The association was found to be statistically significant, showing that hypertension was positively associated with higher socioeconomic status (p<0.000). The results of the present study is similar to the studies conducted by Todkar SS et al[10], Gupta SP et al (1977) [14], Gupta SP et al (1978) [15] Sharma BK et al[16].

The present study revealed that, the prevalence of hypertension was higher (40.3%) in lower education group i.e who studied up to primary level. It was lowest among drivers who studied up to PUC(12th std)/ Diploma (13.5%) and no one was hypertensive who had studied up to graduate level. This association was also found to be statistically significant (p<0.000).

These findings were in contrast with the study conducted by Hazarika NC et al [18] in 2002 which did not find any association between hypertension and educational status, but similar to the result revealed by Khadilkar HA [13].

In the present study hypertension was more in Muslims (32.3%) compared to Hindus (21.6%). There was only 1 Christian in our study who was hypertensive. This association was statistically significant (p<0.040). Similar results were shown in a study conducted by Venugopal et al [19] which revealed that, the prevalence of hypertension was highest among Christians (42.9%) followed by Muslims 20.9% and Hindus 15.7%, however this difference was not found to be statistically significant.

In the present study, prevalence of hypertension is least in drivers (7.3%) whose duration of service in the department is less than 10 years. Prevalence of hypertension was gradually increased as the duration of service increased and it is highest in drivers (71.4%) whose duration of service in the department is more than 30 years. This association between hypertension and duration of service was found to be statistically significant (p<0.000). Study conducted by Ragland DR et al[20] among transit vehicle operators showed similar results. Duration of service is one of the indicators of psychosocial stress. Hence as the duration of service increased, psychosocial stress also increased which leads to increased prevalence of hypertension, as seen in the present study.

Conclusion

The prevalence of hypertension was 23.8% among bus drivers. Among hypertensives, 70.1% participants were not aware of their hypertensive status. The sociodemographic determinants, found to be significantly related to hypertension in present study were increasing age, high socioeconomic status, low education status and religion. Regular screening programmes are required among these specific occupational groups (bus drivers) for early detection and intervention of hypertension. An educational programme has to be conducted to raise the awareness among bus drivers regarding consequence of high blood pressure, focusing more on prevention and control of hypertension.

Implementation of interventional measures like life style modification, including stress management by alternative medicine like Yoga is also recommended.

Limitations of the study

The present study focuses mainly on socio-demographic and occupational risk factors associated with hypertension and other modifiable and non-modifiable risk factors have not been studied in the present study.

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