

Original Research Article

Psychological distress in relation to blood pressure among Andhra Pradesh state road transport corporation bus drivers, Vijayawada

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ABSTRACT

Background: One of the major health problem worldwide is elevated blood pressure (BP). Prior research had shown that hypertensives experience psychological distress, although pre-hypertensives have not yet been subject to this research. Objectives were to assess the major risk factors of increasing BP among bus drivers and to assess psychological distress in relation to BP levels.

Methods: A cross sectional study was conducted among Bus drivers aged above 20 years, study was carried out between July to October of 2022, a sample of 135 was taken. Inferential statistics such as Pearson Chi square test and an unpaired independent-sample t-test was used to assess the difference between pre-hypertensive and hypertensive individuals on GHQ score.

Results: In the present study (n=135), 47% were normotensive, 34% were in hypertensive stage and 19% were in pre-hypertensive stage. On assessment of psychological distress in relation to BP among bus drivers the mean of (General health questionnaire) GHQ-12 was found to be 17.57 among hypertensives and 17.86 among pre-hypertensives. Two tailed significance value of 0.768 was observed between pre-hypertensive and hypertensive individuals indicating that psychological distress had significant effects.

Conclusions: The prevalence of hypertension and pre-hypertension was among bus drivers, leading to cardio vascular diseases which in turn causes increased morbidity and mortality, lowering individual productivity and having an impact on the national economy. The prevalence of non-communicable diseases should be monitored by lifestyle changes and periodic screenings.

Keywords: Pre-hypertension, Hypertension, Bus drivers, GHQ, BP

INTRODUCTION

Increased blood pressure (BP) is considered as one of the major health problem world-wide and one of main contributing factor to development of non-communicable diseases, including CVD and premature death.¹ Longstanding hypothesis is that individuals who are prone to increase in BP when under psychological stress are more likely to develop hypertension.^{2,3} Work related stress contributes to development of hypertension, and numerous studies have looked at various components of workplace stress, such as job security, job satisfaction, pay, work hours and perceived discontent.^{4,5}

Prehypertension is a precursor to hypertension status. Non-pharmacological therapy, which includes changing one's lifestyle, is preferred method of pre-hypertension management.^{6,7} According to (Joint National Committee) JNC-7, term "pre-hypertension" is used to designate those who are at a high risk of developing hypertension.⁸ World health organisation (WHO) defines mental health as a condition of mental well-being that helps people to manage life's stressors, recognize their potential, perform well in learning and working environments, and contribute to their community.⁹ There are a number of scales that can be used to assess individual's health; however, research studies most frequently employ GHQ.¹⁰ GHQ is valid measure for assessing a person's

psychological health.¹¹ Although psychological distress has been previously documented in hypertensives, evidence in pre-hypertensives has not yet been published.

Objectives

Objectives were to assess major risk factors of increasing BP among bus drivers and to assess psychological distress in relation to BP levels among bus drivers.

METHODS

Study design

The present study is a cross sectional study conducted at Andhra Pradesh public transport division, Vijayawada among bus drivers aged above 20 years working for more than one year. Study was carried out between July to October of 2022.

Sample size was calculated to be 133, the prevalence of pre-hypertension was found to be 43% according to Udayar et al.¹² Sample size calculated using the formula $=4pq/l^2$, $l=20\%$ of prevalence. Out of 380 study participants working in the bus department, a sample of 135 was taken using simple random sampling technique.

Inclusion and exclusion criteria

Study participants who have given the consent were included in the study and the participants suffering from chronic diseases like cardio-vascular disease, diabetes mellitus type II were excluded from the study.

Materials

After obtaining written informed consent, study participants were administered questionnaire consisting of socio demographic profile and factors contributing to hypertension.

Using standardized techniques height and weight were recorded.¹³

BMI was calculated using Quetelet index and classified in accordance with the South Asian BMI classification.¹⁴

BP was recorded using the electronic OMRON-HEM 7120 machine. BP was assessed from the participant's right arm after he had five-minute rest. Mean value of three BP readings taken were obtained and were included in study. BP levels classified based on European heart journal guidelines for management of hypertension (HTN).¹⁵

If a subject mentioned receiving treatment and diagnosed as hypertensive from a medical practitioner, it was considered that they were aware of their HTN status.

Those who have smoked at any point in previous year were categorized as known smokers and those who had consumed alcohol in previous year were labelled as known alcoholics.

Participants were provided a 12-item questionnaire (the GHQ) to assess their general mental health.^{16,17} This questionnaire includes 12 items (six positively worded items (e.g.: Have you been able to concentrate on whatever you are doing?) and negatively worded items (e.g., Have you lost much sleep over worry?). Four-point Likert scale was used to analyse. The overall score, which ranged from 0-36, was calculated by adding the scores of all the components. Scores over the cut-off point of 12 could be classified as having mental health issues.¹⁷

Ethical issues

Ethical approval was taken from the institutional ethical committee (Approval No: PG/852/22). The procedures adopted for the study didn't have any methods that are likely to cause any problem to the subjects.

Data analysis

Data was analyzed using statistical package for the social sciences trail version 23 (SSPS) Data was presented in frequencies and percentages. Inferential statistics such as Pearson Chi square test of significance and $p < 0.05$ will be considered as statistically significant. An unpaired independent-sample t-test was used to assess the difference between pre-hypertensive and hypertensive individuals on GHQ score.

RESULTS

In the present study 47% (n=135) were normotensive, 34% were in hypertensive (HTN) stage and 19% were in pre-hypertensive (Pre-HTN) stage.

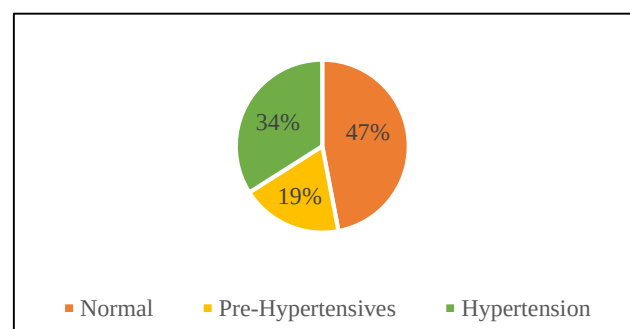


Figure 1: Distribution of study participants according to BP status, (n=135).

In the present study (n=135) those who were in hypertensive stage 39% were already diagnosed with hypertension and on medication, 61% didn't know their hypertensive state and remained undiagnosed.

In present study, mean age of study participants was 45.8 years (SD±10.7 years), 40% (n=50) are hypertensives and are in age group of >50 years. In present study (n=135), majority were in obesity stage 1 (n=68) and 42% were in pre-hypertension and 26% were in hypertensive stage and

in stage 2 obesity (n=41), 58% were in pre-hypertension and 26% were hypertensives. Majority (n=89) were not having family history of hypertension, but those who were not having family history 20% were in pre-hypertension and 32% were in hypertension.

Table 1: Socio-demographic and major risk factors among study participants vs. BP, (n=135).

Parameters	N	Normal (%)	Pre HTN (%)	HTN (%)	Chi square	P value
Age (Years)						
20-35	13	48	26	26	1.96	0.743
36-50	62	49	19	32		
>50	50	44	16	40		
BMI (Kg/m²)						
Normal	10	30	30	40	4.151	0.656
Overweight	16	43	43	37		
Obese 1	68	42	42	26		
Obese 2	41	58	58	26		
Family history						
Yes	46	50	15	33	0.768	0.681
No	89	45	21	34		

Table 2: Socio-demographic and major risk factors among study participants vs. BP, (n=135).

Variables	N	Normal (%)	Pre HTN (%)	HTN (%)	Chi square	P value
Physical activity						
Yes	34	44	11	44	1.39	0.49
No	101	47	20	32		
Frequent intake of fruits and veg/day						
Yes	22	46	19	8	0.065	0.968
No	113	40	20	38		
Alcohol						
Yes	41	34	17	49	5.862	0.05
No	94	52	20	28		
Smoking						
Yes	37	39	21	40	1.625	0.444
No	98	50	18	32		
Sleep pattern						
Adequate	57	56	17	27	3.971	0.150
Inadequate	78	40	20	40		

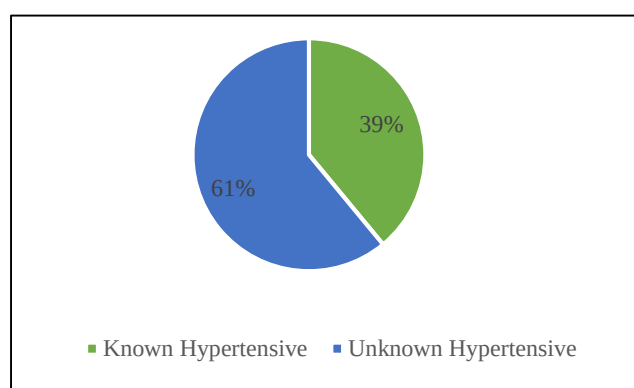


Figure 2: Distribution of study participants according to hypertensive status, (n=46).

In the present study (n=135), majority (n=101) were not having regular physical activity, among them 20% were

in pre-hypertension and 32% were in hypertension. Majority (n=113) were not having frequent intake of fruits and vegetables per day, among them 20% were in pre-hypertension and 38% were in hypertension. Among study participants (n=41) who had history of alcoholism, 49% were hypertensives and it is statistically significant. Among study participants who had history of smoking (n=37) 40% were hypertensives and 21% were in pre-hypertension.

Table 3: Assessment of psychological distress in relation to BP among study participants, (n=135).

Variables	N	Mean of GHQ 12	S. D.	P value
Hypertension	26	17.5769	2.57951	0.768
Pre-hypertension	46	17.8609	2.49608	0.770

T test result indicates that mean difference in total GHQ score between 2 groups (Pre-hypertensive vs hypertensive) individuals not statistically different. Two tailed significances=0.768. Yet it has important implications for public health prevention and management of pre-hypertension as chronic health condition.

DISCUSSION

In the present study conducted among bus drivers (n=135) Mean age of the study participants was 45.8 years (SD±10.7 years), 47% (n=135) were normotensive, 34% were hypertensives. In a study conducted by Lakshman et al among occupational bus drivers 41.3% of the study population was found to be hypertensive, 41.9% bus drivers had BP in pre-hypertensive range.¹⁸

In a study conducted by Kaewboonchoo et al in Bangkok among bus drivers, 23% of bus drivers were found to be hypertensive compared to 15.85% of the normal population.¹⁹

In the present study (n=135) those who were in hypertensive stage 39% were already diagnosed with hypertension and on medication, 61% doesn't know their hypertensive status and remained undiagnosed. This is similar to the study conducted among bus drivers in north Kerala where the level of awareness, treatment and adequate control was poor.¹⁸

In the present study risk factors of hypertension like obesity, physical inactivity, and family history are more among bus drivers. This is similar to the study conducted among bus drivers in north Kerala.¹⁸

Studies conclude that hypertension development is primarily enhanced by psychological distress.²⁰ In the present study on assessment of psychological distress in relation to BP among bus drivers the mean of GHQ-12 was found to be 17.57 among hypertensives and 17.86 among pre-hypertensives. This is similar to a study conducted by Al-Zahrani et al among adults of south Arabia using GHQ-12 questionnaire with results showing that psychological distress is among pre-hypertensives also.²¹

Many studies have attributed the higher prevalence of HTN among bus drivers to job stress especially while working in heavy traffic (a "work barrier" which causes risky behavior or needs extra effort), factors in the occupational environment, erratic work hours, sedentary lifestyle, and a sense of under payment.^{22,23} There are also studies that say that there is no association between stress and HTN.²⁴

Strengths

In our study multiple BP readings were taken, Subjects with abnormal BP were advised regarding appropriate

medical care. We used valid questionnaire to assess the mental well-being of the study participants.

Limitations

Small sample size was taken for the study, the results cannot be generalized to whole population. Other scales can also be used to assess mental well-being of an individual we did not quantify the intake of alcohol. It is difficult to infer causation since it does not account for temporality, that is, if hypertension induces psychosocial stress or hypertension is induced by psychological stress.

CONCLUSION

The current study shows that as compared to normotensives, self-rated mental wellbeing and psychological wellbeing are all considerably poorer among pre-hypertensives. Therefore, instead of waiting for a precise issue or decline of psychological status to be detected, there is a need to assess these patients for psychological wellbeing. Furthermore, diagnosis, screening and treatment must regularly be integrated into the daily care of patients especially for them who are working in the stressful jobs like bus drivers.

Recommendations

Increased prevalence of hypertension and pre hypertension leads to cardio vascular diseases which in turn leads to morbidity and mortality decreasing the productivity of the individual and affecting the economy of country. Life style modifications and periodic screening should be done to check the prevalence of non-communicable diseases.

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