

Original Research Article

Assessment of non-communicable disease risk factors among Andhra Pradesh state road transport corporation bus drivers of Vijayawada

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ABSTRACT

Background: Non-communicable diseases (NCDs) are lifestyle disorders, which contribute to 41 million total deaths globally. In India, it contributes to around 6 million (60%) of all deaths in 2021. The main objective of the study was to assess the socio-demographic factors, prevalence, and association between demographic profile and major NCD risk factors among Andhra Pradesh state road transport corporation bus drivers of Vijayawada.

Methods: It is a cross-sectional study conducted from July to October 22 among APSRTC bus drivers aged above 20 years in Vijayawada. Data was collected by using a pre-designed modified world health organization questionnaire.

Results: The results(n=120) from the current study showed that the majority of the driver's mean age was 46.4±10.9, 37.5% had hypertension, 24.2% had diabetes, 54.2% had insufficient sleep, and 79.2% had work-related stress.

Conclusions: Occupational groups like bus drivers have more prevalence of NCD risk factors and which creates a burden on the healthcare system. A vigorous effort is needed to develop strategies for preventing and managing NCDs.

Keywords: Noncommunicable disease, Bus drivers, Risk factors, Comorbidities, Lifestyle disorder, Occupational groups

INTRODUCTION

In 2021, non-communicable diseases (NCDs) comprising cardiovascular diseases (17.9 million or 44%), cancer (9.3million or 16%), chronic respiratory diseases (4.1million or 9.5%), diabetes (1.5million or 2%) would contribute to 41million (71%) total deaths globally.¹ Around 6 million (60%) of all deaths in India in 2021 was attributed to NCDs.² Rapid urbanization has contributed to increase burden of NCDs in India in recent years.³ Among NCD risk factor tobacco, harmful use of alcohol, insufficient physical activity, unhealthy diet, and work-related stress often affects the individual's health leading to diseases like hypertension, diabetes, and obesity. The lifestyle and related non-communicable disease risk factors are influenced by occupation and workplace culture.⁴ Some of the common risk factors among bus drivers include prolonged sitting, work-related stress,

irregular sleep patterns, and irregular eating patterns. The early detection and treatment of NCDs, as well as changing risky lifestyle choices, can avert almost 40 to 50 percent of NCDs.⁵ There is a significant knowledge gap among APSRTC bus drivers on risk factors and their combined effects on non-communicable diseases. Therefore, research on NCD risk factors in APSRTC bus drivers is necessary. The main objective of the study was to assess the socio-demographic profile, prevalence, and association between demographic profile and major NCD risk factors among APSRTC (Andhra Pradesh state road transport corporation) bus drivers.

METHODS

A cross-sectional study conducted on bus drivers aged above 20 years currently working in APSRTC and the study was carried out from July to October 22 in APSRTC

bus stand Vijayawada. The sample size was estimated to be 117 based on the study conducted by WHO-ICMR in 2011 in which the prevalence of the NCD risk factor was 25%. The sample size was calculated by using $4pq/l^2$ with an absolute precision of 8% and the final sample was rounded to 120.⁶ Systematic random sampling technique was applied for selecting a sample of 120 out of 380 bus drivers who were currently working in the APSRTC bus stand in Vijayawada. The first study participant was selected randomly by using currency note. Study participants who were suffering from stroke, rheumatic heart disease, ischemic heart disease, and cancer were excluded from the study.

A pre-designed modified semi-structured WHO Questionnaire consisting of demographic details and major risk factors including tobacco, harmful use of alcohol, insufficient physical activity, overweight and obesity, unhealthy diet, work-related stress, and driving problems leading to diseases like hypertension, diabetes, accidents, and obesity was applied.⁴⁻⁹ Height and weight were recorded using standardized methods.¹⁰ BMI was calculated using the Quetelet index, classified as per the South Asian BMI classification.¹¹ Blood pressure was recorded using the electronic OMRON-HEM 7120

machine. The blood pressure (BP) is assessed from the participant's right arm after they have taken five-minute rest. A "current smoker" was defined as a person who was consuming any form of tobacco for the past 30 days. For alcohol consumption, a "current user" was a person who was consuming alcohol for the past 30 days.³

Statistical analysis

Data was collected and entered into Microsoft excel sheet and was analyzed using the IBM SPSS 23version (trial version) by using appropriate statistical tests (Chi-square test or fisher exact test, p value and odds ratio).

RESULTS

Among 120 study participants, 45% were in the age group of 36-50 years, 39.2% were aged >50 years with mean age of 46.4 ± 10.9 . 60.8% have completed secondary education, 65.8% were Hindus, 80% belong to nuclear type of family, and 60% belong to lower middle class (III) according to the modified Kuppaswamy classification 2021 in the below (Table 1).

Table 1: Socio-demographic variables among APSRTC bus drivers (n=120).

Variables	N	%
Age (years)		
20-35	19	15.8
36-50	45	45.0
>50	47	39.2
Education		
Secondary	73	60.8
Intermediate	22	18.3
Degree	25	20.8
Socio-economic status (Modified Kuppaswamy Scale 2021)		
Upper Middle (II)	16	13.3
Lower Middle (III)	72	60.0
Upper Lower (IV)	32	26.7

Table 2: Major risk factors among APSRTC bus drivers (n=120).

Variables	N	%
BMI (Asian classification) (Kg/m²)		
Normal (18.5-22.9)	10	8.3
Overweight (23-24.9)	59	49.2
Obese 1 (25-29.9)	37	30.8
Obese 2 (>30)	14	11.7
H/o Diabetes		
Present	29	24.2
Absent	91	75.8
Hypertension (mmHg)		
Normotensive (SBP:120-129, DBP:80-84)	54	45
Prehypertensive (SBP:130-139, DBP:85-89)	21	17.5
Hypertensive 1 (SBP:140-159, DBP:90-89)	26	21.7
Hypertensive 2 (SBP:160-179, DBP:100-109)	15	12.5
Hypertensive 3 (SBP: >180, DBP:>110)	4	3.3

Continued.

Variables	N	%
Current smoker		
Yes	30	25.0
No	90	75.0
Alcohol consumption		
Yes	32	26.7
No	88	73.3
Routine exercise		
Yes	15	12.5
No	105	87.5
Practice at least 30 min walk		
Yes	25	20.8
No	95	79.2
Frequent intake of fruits and vegetables		
Yes	15	12.5
No	105	87.5
Salt intake/day (>5 g/day)		
Yes	98	81.7
No	22	18.3
Regular meals		
Yes	38	31.7
No	82	68.3

Table 3: Working conditions among APSRTC bus drivers (n=120)

Variables	N	%
Years of driving experience		
<10	37	30.8
>10	83	69.2
Duration of driving (hours)		
<10	74	61.7
>10	46	38.3
How many shifts of driving		
Single	79	65.8
Double	41	34.2
Sleep pattern		
Adequate (>7 hours)	55	45.8
Inadequate	65	54.2
Stress-related work		
Yes	95	79.2
No	25	20.8
Speed limit kilometer per hour		
<70	102	85.0
>70	18	15.0
Did you follow the traffic signal		
Yes	107	89.2
No	13	10.8
Did you use your mobile phone during driving		
Yes	103	85.8
No	17	14.2
Did you wear seatbelts while driving		
Yes	102	85.0
No	18	15.0
Any past H/O accidents		
Yes	11	9.2
No	109	90.8
Do you have any musculoskeletal disorders		
Yes	60	50.0
No	60	50.0

Table 4: Association between significant demographic variables to major NCD risk factors (n=120).

Obesity				Hypertension			Diabetes		
Variables	Frequency (%) (n=37)	P value	Odds Ratio	Frequency (%) (n=66)	P value	Odds Ratio	Frequency (%) (n=91)	P value	Odds ratio
Age (years)									
<40	6 (16.2)	0.108	2.227	22 (33.3)	0.038	1.435	26 (28.6)	0.225	0.598
>40	31 (83.8)			44 (66.7)			65 (71.4)		
Education									
SSC	23 (31.5)	0.040	1.284	42 (57.5)	0.484	1.298	19 (26.0)	0.352	1.302
Above SSC	14 (29.8)			24 (51.1)			10 (21.3)		
Practice at least 30 min walk									
No	31 (83.8)	0.406	1.360	53 (80.3)	0.735	1.273	24 (82.8)	0.584	1.263
Yes	6 (16.2)			13 (19.7)			5 (17.2)		
Routine exercise									
No	35 (94.6)	0.144	2.500	56 (84.8)	0.332	0.800	25 (86.2)	0.809	0.893
Yes	2 (5.4)			10 (15.2)			4 (13.8)		
Sleep pattern									
Adequate (>7 hours)	16 (43.2)	0.109	1.551	26 (39.4)	0.118	0.768	11 (37.9)	0.327	0.722
Inadequate	21 (56.8)			40 (60.6)			18 (62.1)		
Current smoker									
No	30 (81.1)	0.304	1.429	46 (69.7)	0.138	0.767	22 (75.9)	0.902	1.048
Yes	7 (18.9)			20 (30.3)			7 (24.1)		
Current alcohol									
No	25 (67.6)	0.419	0.790	43 (65.2)	0.046	0.709	22 (75.9)	0.641	1.192
Yes	12 (32.4)			23 (34.8)			7 (24.1)		
Driving duration (hours)									
<10	25 (67.6)	0.375	1.295	46 (69.7)	0.045	1.43	16 (55.2)	0.409	0.765
>10	12 (32.4)			20 (30.3)			13 (44.8)		
Salt intake per day (<5 grams)									
No	5 (13.5)	0.362	0.696	14 (21.2)	0.368	1.199	7 (24.1)	0.354	1.417
Yes	32 (86.5)			52 (78.8)			22 (75.9)		
The speed limit on highway (kmph)									
<70	31 (83.8)	0.803	0.912	54 (81.8)	0.281	1.088	23 (79.3)	0.373	0.676
>70	6 (16.2)			12 (18.2)			6 (20.7)		
Stress-related work									
No	6 (16.2)	0.406	0.735	14 (21.2)	0.910	1.023	1 (3.4)	0.008	0.136
Yes	31 (83.8)			52 (78.8)			28 (96.6)		

Table 5: Association between variables to NCD major risk factors (n=120).

Smoking				Alcohol			Stress-related work		
Variables	Frequency (%) (n=30)	P value	Odds Ratio	Frequency (%) (n=66)	P value	Odds Ratio	Frequency (%) (n=29)	P value	Odds ratio
Age (years)									
<40	8 (26.7)	0.014	2.099	10 (30.3)	0.491	1.248	19 (20.0)	0.004	3.692
>40	22 (73.3)			23 (69.7)			76 (80.0)		
Education									
Below SSC	21 (28.8)	1.411	1.705	24 (32.9)	2.703	2.068	60 (82.2)	1.034	1.582
Above SSC	9 (19.1)			9 (19.1)			35 (74.5)		

In (Table 2), 49.2% of study participants were overweight, 30.8% were obese, 24.2% had diabetes, and 37.5% had hypertension. 26.7% were alcoholics and 25% were current smokers. Only 31.7% of subjects regularly ate meals, and only 12.5% exercised regularly and consumed fruits and vegetables often. 28% of drivers practice daily walks of at least 30 minutes. In (Table 3), 69.2% of drivers have more than ten years of experience, 61.7% drive for fewer than ten hours, 65.8% work a single shift, 54.2% have insufficient sleep, 79.2% have stressful jobs, 85.0% maintain speeds below the 70 km/h limit and are wearing seat belts but using a mobile phone while driving 89.2% obey traffic signals and have no history of accidents and 50% are suffering with any musculoskeletal disorders. In (Table 4), The majority of study participants are above the age of 40, which carries a 2.2 times risk of becoming obese (p value=0.108), as well as a 1.4 times risk of being hypertensive (p value=0.038) is statistically significant. Secondary education have shown statistically significance for developing obesity (p-value = 0.04) and not statistically significant for developing diabetes and hypertension (p value=1.2). Most of them are not practicing daily exercise for at least 30 minutes at a time (1.3 times), which increases their risk of developing diabetes, hypertension, and obesity but is not statistically significant (p value=0.144). Bus drivers who don't get enough sleep are 1.5 times more likely to become fat (p value=0.109), which is not statistically significant.

DISCUSSION

In the current study a majority of 45% were aged above 40 years with mean age of 46.6 years comparable to Audichya et al study 51.5% aged above 40 years with mean age of 48 years and in Rao et al study 47.8% were aged above 40 years with mean age of 40.2 years.^{13,14}

In the present study 60% completed secondary school education, similar to Rao et al 66.7%, Audichya et al 76%. In the present study, 37.5% are current smokers and 26.5% are current alcoholics, similar to Audichya et al, 26.5% are current smokers and 33.5% were alcoholics, Lakshman et al 46% were current smokers, 86.3% were alcoholic, Jadhav et al 79.8% were current smokers, 24.2% were alcoholics, Hungund et al 24.9% were current smokers, the alcohol consumption rate was 35.1%.^{4,15,16} 12.5% of study participants were performing routine exercise similar to Jadhav et al. in contrary Audichya et al showed that 63.5% were performing of light physical activity.

High salt intake of >5 grams per day was observed among 81.7% study participants and 12.5% were consuming vegetables and fruits, whereas only 18% of study subjects were consuming high salt intake and 72% were consuming vegetables daily and 22% were consuming fruits daily in Audichya et al. In the current study 42.5% are at risk of getting obese, 37.5% hypertension, 24.2% diabetes similar to Rao et al 42.2% obese, 28.9% hypertensives, 11.1% diabetic and 41.3% of the study population was found to be hypertensive in Lakshman et al study.

69.2% of bus drivers had >10 years of driving experience which is comparable to Lakshman et al. Insufficient sleep was observed among 54.2% of drivers which is comparable to Lakshman et al, Jadhav et al 53.1%, and 66.3%.

Work stress along with increasing age and long duration of driving of >10 hours per day, lack of insufficient sleep leads to early initiation of smoking and alcohol consumption which in turn leads to development of NCDs among bus drivers.

Limitations

Limitations of the current study was that the study sample size was not representative to the general population.

CONCLUSION

The study concluded that there is a huge gap in knowledge regarding risk factors and their cumulative effects on non-communicable diseases. Many of the study participants were not known hypertensive and were found with increased levels of blood pressure, obesity, and diabetes.

Recommendation

Regular periodic screening for the presence of NCD risk factors and diseases in the workplace should be conducted for early diagnosis and treatment.

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