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STUDY OF CARDIOVASCULAR RISK FACTORS AMONG TRANSPORT DRIVERS IN RURAL AREA OF ANDHRA PRADESH

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ABSTRACT

Background: Non-communicable diseases are the leading causes of death globally and recent studies had demonstrated that transport drivers are at greater risk of developing cardiovascular diseases due to an incorrect diet, sedentary behavior, unhealthy lifestyles and obesity.

Objective: To characterize transport drivers working in shifts through the assessment of clinical and demographic variables and the presence of some cardiovascular risk factors.

Materials and methods: Cross sectional study was carried out among transport drivers of APSRTC of Kuppam. Data was collected regarding socio-demographic profile, morbidity status, perceived occupational problems and anthropometry were also measured.

Results: Out of 244 transport drivers 114 were tobacco consumers and 139 subjects were alcohol consumers. Perceived reasons for smoking were it suppresses cold (28.04%) and enables to concentrate on work (20.73%). Perceived reasons for alcohol consumption were peer pressure (25.9%) and it suppresses cold (20.1%). 36.1% were pre-obese, 35.2% were obese, 22.95% were pre-hypertensive and 18.86% hypertensive. Duration of alcohol intake and tobacco use, BMI, WHR& WC were significantly associated with hypertension.

Conclusions: Higher prevalence of risk factors of cardiovascular disease with various perceived reasons and they were statistically significantly associated with hypertension.

Key words: Hypertension, Transport Drivers, Risk Factors.

INTRODUCTION

Noncommunicable diseases (NCDs) are the leading causes of death globally, killing more people each year than all other causes combined[1]. Of the 57 million deaths that occurred globally in 2008, 36 million (almost two thirds) were due to NCDs, comprising mainly cardiovascular diseases, cancers, diabetes and chronic lung diseases[2]. Population growth and improved longevity are leading to in-

creasing numbers and proportions of older people, with population ageing emerging as a significant trend in many parts of the world. As populations age, annual NCD deaths are projected to rise substantially, to 52 million in 2030[3].

About one fourth of global NCD-related deaths take place before the age of 60.NCDs are caused, to a large extent, by four behavioral risk factors that are pervasive aspects of economic transition, rapid urbanization and 21st-century lifestyles: tobacco use, unhealthy diet, insufficient physical activity and the harmful use of alcohol[1].

Workers in the transportation industry particularly drivers are at greater risk of an incorrect diet and sedentary behavior. Obesity and hypertension are important risk factors for cardiovascular diseases and is common among professional drivers[4]. Increased trend of cardiovascular and cerebrovascular disease, such as stroke is seen among professional drivers[5,6,7]. Drivers employed in public or private transport industries who carry passengers are at greater risk than those who carry goods[8,9].

Apart from traditional risk factors, low physical activity at work or during leisure time, cold, and heat have been proposed as risk factors for myocardial infarction[10]. A combination of high psychological demands and low control at work (job strain) has been proposed as being associated with an increased risk of developing coronary heart disease[11].

The aim of the present study is to characterize a section of transport drivers working in shifts through the assessment of clinical and demographic variables, and the presence of some cardiovascular risk factors.

MATERIALS AND METHODS

A cross sectional study was carried out from July to Dec 2012 for a period of 6 months, involving a population transport drivers working in Andhra Pradesh State Road Transport Corporation (APSRTC) in the town of Kuppam. Institutional Ethical Committee approval was obtained before conducting the study. Informed consent was obtained and data was collected from the subjects by administering semi structured questionnaire. And they were examined during the official working hours (10am to 5pm) with regard to sociodemographic profile and anthropometric characteristics (weight, height, body mass index (BMI), abdominal circumference), systolic and diastolic blood pressure.

Self-history, use of medication and lab report of diabetes was included in collecting the data. Blood pressure was measured at rest with the subject remaining seated for 10 minutes and the average of the two readings was taken into consideration for classification according to World Health Organization (WHO) [12].

Anthropometric measurements: Calibrated balance beam scale was used to measure weight in the upright position to the nearest 0.1 kg. Height was measured with bare foot to the nearest 0.1cm using calibrated Stadiometer. Body mass index (BMI) was calculated by dividing observed weight by height squared (kg/m2). Waist circumference (WC) was measured to the nearest 0.1 cm at the midpoint between lower end of the rib cage and iliac crest. Hip circumference was measured to the nearest 0.1 cm at the greatest horizontal circumference below the iliac crest at the level of greater trochanter. BMI was classified using the method stipulated by the World Health Organization for South Asians[13,14].And Waist Hip ratio was classified according to Report of a WHO Expert Consultation[15].

With regard to behavioral risk factors, tobacco questionnaire included data on self-reported duration, frequency and quantity of tobacco consumption. Individuals were classified as ex-smoker, current smoker and smokeless tobacco product consumer. Self-reported alcohol intake data was collected and subjects were classified as present consumer, past consumer and not a consumer.

After the medical examination employees completed a semi structured questionnaire assessing their work schedules, personal habits (health and job-related), self-perceptions about specific occupational problems.

Definitions:

Current smoker: A person who had smoked at least 100 cigarettes over their lifetime, and continued to smoke every day or some days. Ex-smoker or former smoker was defined as a person who had smoked more than 100 cigarettes over their lifetime and who did not smoke every day or some days[16].

Alcohol use: Present consumer was defined as person who continued to consume alcohol every day or some days. Past consumer was defined as person who was consuming alcohol in the past and stopped taking alcohol[17].

Body mass index of the participants was classified by using WHO classification recently recommended for Asians[13,14].

Waist Circumference ≥90 cms or Waist-Hip Ratio (WHR)>0.90 were taken as criteria to define Central Obesity[15].

Hypertension: Defined as systolic blood pressure (SBP) of ≥ 140 mmHg or diastolic blood pressure (DBP) ≥ 90 mmHg as per WHO criteriaor history of previously known disease and pre-hypertension

was defined as SBP 120-139 mmHg or DBP 80-89 mmHg.

Type 2 Diabetes mellitus: Self-reported history of previously known disease was included in the questionnaire.

Statistical Analysis: Data was coded and entered in the computer for analyses. Statistical package SPSS (version19.0) was used for the analyses. All analyses were two-tailed and P-value <0.05 was considered statistically significant.

RESULTS

Socio-demographic characteristics: A total of 244 male transport drivers were studied. Mean age of study subjects was 41.35±10.04 yrs with a range of 20-60 yrs. 39.34% subjects were above 45 years of age. 214 (87.71%) subjects were ever married. 160 (65.6%) subjects belonged to nuclear family. 106 (43.5%) subjects had secondary education; while 122 (50%) had primary education. 174 (71.4%) subjects belonged to upper and middle socio-economic class according to modified BG Prasad classification[18] while 70 (28.6%) belonged to lower class. Mean length of occupation was 18.00±7.62 years with a range of 1-35 years; while average daily working hours was 10.52±2.29 with a range of 6-17 hours. Mean and Standard Deviation (SD) of various risk factors is given in Table 1.

Personal habits/addictions: 114(46.70%) subjects had habit of tobacco consumption out of which 82 were tobacco smokers and 32 had habit of tobacco chewing, 58 subjects started the habit of tobacco consumption after joining the job. 20 (7.77%) had habit of Gutkha chewing. Average duration of tobacco smoking was 12.39±7.45 years and the average number of tobacco smoking in the form of Cigarettes/Beedis/Others were 5.09 times a day.

Of the total 139 alcohol consumers, the average duration of alcohol consumption was 18.24±7.03 years. Average amount of alcohol consumed per session was 175.30±68.39 ml. 17.27% of the subjects were consuming alcohol on a 'daily' basis, while 15.83%% were taking it on an 'alternate day' basis and 41% were consuming alcohol on 'weekly' basis. 57 out of total 139 alcohol consumers started the habit after joining the job. Various reasons for starting habit of smoking and alcohol consumption is given in Table 2.

Total 22.1% of transport drivers had opinion that their job is a mentally challenging one. The reasons were driving in congested road (18) aggressive passengers (14) night shifts (12) weekend shifts (8) lack of leisure time (2).

Total 32 (13.1%) subjects were engaged in regular physical exercise while 212 (86.9%) were not engaged in any sort of physical exercise.6.21% of the transport drivers also reported a family history of diabetes. With regard to dietary factors 144(58.1%) drivers had a regular habit of eating outside food when they are on duty.60 (24.6%) of drivers also gave history of extra salt consumption in the form of pickle, pappad, dry fish etc.

Table 1: Mean and standard deviation (SD) for various cardiovascular disease risk factors

Variables	Mean	±SD
Age (years)	41.35	10.44
Height (cm)	165.01	4.76
Weight (kg)	69.80	15.75
Body mass index (kg/m2)	25.98	4.19
Waist circumference (cm)	88.89	10.43
Hip circumference (cm)	92.13	8.40
Waist /hip ratio	0.95	0.06
Systolic blood pressure (mmHg)	120.30	14.41
Diastolic blood pressure (mmHg)	80.15	11.36

Table 2: Perceived reasons for tobacco smoking and alcohol consumption

Perceived Reasons	Frequency (%)
for smoking	
It suppresses cold	23 (28.04)
Prevents sleep while on duty	11 (13.41)
Relives job stress	14 (17.07)
It boosts confidence	14 (17.07)
Enables to concentrate on work	17 (20.73)
Just for fun	8 (9.75)
Total	**82 (**100)
for drinking	
It increases confidence	18 (12.9)
Boosts energy to work	15 (10.8)
It suppresses cold	28 (20.1)
Taken for fun	26 (18.7)
Peer pressure	36 (25.9)
Family problems	16 (11.6)
Total	**139 (**100)

Weight, height and body mass index: Table 3 shows the distribution of subjects according to their body mass index (BMI). Mean body mass index (BMI) of 66 (27.1%) subjects was found to be in normal range (18.50-23 kg/m^2); while BMI of 86 (35.2%) subjects was in Obese range (>27.5 kg/m^2). It was also observed that 4 (1.6%) subjects were under-weight (BMI <18.5kg/m^2), 88 (36.1%) subjects were pre obese (BMI= 23-27.5 kg/m2).

Blood pressure: Table 4 shows the distribution of study subjects according to their blood pressure (BP) levels. 154 (63.11%) subjects were found to have normal blood pressure levels while 56 (22.95%) subjects had pre-hypertension and 34 (13.94%) subjects had hypertension. Among hypertensives 10.66% and 3.28% had grade I and grade II

hypertension respectively. 28.7% of the transport drivers also reported a family history of hypertension. Central obesityusing WHR criteria (>0.90) and WC criteria (≥90cm) was present in 128(52.45%) and 111 (45.49%) and subjects respectively. It was also found out that only 20(8.2%) of transport drivers self-reported the history of diabetes.

Table3: Distribution of study subjects according to their body mass index (n=244)

Body mass index (kg/m^2)	Subjects (%)
Underweight (<18.5)	4 (1.6)
Normal (18.5-23)	66 (27.1)
Pre Obese (23-27.5)	88 (36.1)
Obese (>27.5)	86 (35.2)
Total	**244 (100)**

Table 4: Distribution of study subjects according to their blood pressure (n=244)

Blood pressure levels[12]	Subjects (%)
Normal	154 (63.11)
Pre hypertensive	56 (22.95)
Stage 1	26 (10.66)
Stage2	08 (3.28)
Total	**244 (100)**

Table 5.Association between cardiovascular risk factors and Hypertension

	HT/preHT)		P value
	Yes	No	
Alcohol intake(yrs)			
<5	4	14	0.04
6-10	12	14	
11-20	39	32	
>20	15	9	
Tobacco use (yrs)			
<5	29	4	0.04
6-10	9	7	
11-20	21	7	
>20	23	14	
Extra Salt intake			
Yes	18	44	0.14
No	72	110	
BMI			
Normal+Underweight	20	50	0.003
Pre Obese	26	62	
Obese	44	42	
Waist Hip ratio			
>0.9	69	99	0.04
<0.9	21	55	
Waist circumference			
>90cm	51	60	0.007
<90cm	39	94	

With respect to association between hypertension and various risk factors (table 5), statistically significant association was found between duration of alcohol intake, duration of tobacco use, body mass index, waist hip ratio and waist circumference, whereas association between extra salt intake and hypertension was not statistically significant.

DISCUSSION

Professional drivers are one of the important high risk population who are at risk of increased morbidity and mortality associated with cardiovascular dieases.Adaption of unhealthy behavioral and lifestyle factors constitute a major chunk of the problem. Our study results indicated high prevalence of behavioral risk factors, central obesity and hypertension among male transport drivers. Prevalence of these risk factors increased during the most productive years (25-44 yrs) putting them at risk of cardiovascular morbidity and mortality at relatively younger age. This population provided an opportunity to study the influence of behavioral and lifestyle transition on the prevalence of cardiovascular risk factors. Tobacco consumption was seen in higher proportion in our study subjects, the findings were similar to the studies by Per Gustavsson et al[10]. Prevalence of smoking (33.6%) and hypertension (18.85%) and mean body mass index (25.98 kg/m^2) were comparable with the studies done by Kartikeyan S et al[19],Kobayashi F et al[20], Tveito TH[21] and Wang PD[7].

Zulkifle MD[22] reported a similar finding with respect to the prevalence of hypertension (14.02%) based on a study done among Bangalore Metropolitan Transport Corporation (BMTC) Employees.However in the present study the prevalence was less than the reported national prevalence of 25%[23,24]. Our study results are consistent with the cross sectional analytical study done on professional drivers who worked with heavy vehicles in the city of Yazd[25]. Although one fourth of the study population were consuming extra salt, the results were not statistically significant with respect to hypertension this may due to subjective reporting of salt intake and not estimating the salt intake by 24-h urinary sodium excretion method as per WHO guidelines[26]. In this study, attempt was made to establish the association between diabetes and hypertension but statistically significant association could not be obtained. This might be due to reasons like small sample size and only history of diabetes was elicited through questionnaire and no diagnostic modalities were employed. Most of the study subjects were unaware whether they are diabetic or non-diabetic individuals. A bigger sample with laboratory support to confirm the presence or absence of diabetes could have given better information regarding the association between diabetes and hypertension.

CONCLUSION

In this study significant association of hypertension with 'raised BMI' and 'waist-hip ratio more than 0.9' were obtained but not with 'physical activity'. Duration of tobacco and alcohol consumption were also associated with the increased risk of cardiovascular diseases. Workers employed in the transport sector form a considerable workforce of our nation. Thorough pre-placement and periodical examinations are to be conducted and necessary steps are to be taken. Regular health education programmes are to be conducted regarding various noncommunicable diseases and attendance to such programmes should be made compulsory. Strict guidelines about diet are to be formulated and implemented in all the eateries catering to the employees. Various recreational facilities, counseling centres with psychologists are to be established in all the depots to help the employees cope with their stress.

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