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Study Of Blood Pressure And Random Blood Sugar Level And Proportion Of Known Hypertensive And Diabetic Among Auto Rickshaw Drivers In Mumbai Metropolitan Region

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Abstract

Background

Auto rickshaws are still the most common mode of transport in Mumbai Metropolitan Region. Auto rickshaw drivers are at a higher risk for hypertension and diabetes because of their unhealthy lifestyles like insufficient sleep, stressful occupational conditions, addictions, sedentary lifestyles and irregular eating habits.

Methods

A cross-sectional study was conducted using purposive sampling method among 127 auto rickshaw drivers working in Mumbai Metropolitan Region in the month of January 2024. Age and gender were recorded in the proforma. Blood pressure and random blood sugar level of each subject was tested and recorded. Auto rickshaw drivers suffering from hypertension and diabetes mellitus were noted. Data was entered in Microsoft Excel and analysed. Descriptive and inferential statistics was applied. The statistical level of significance was fixed at $p<0.05$.

Results

127 auto rickshaw drivers were included in the study, of which 103(81.10%) were males and 24(18.90%) were females. 87(68.50%) subjects were in the age group of 18-58 while 40(31.50%) were >58 years of age. 27(21.26%) subjects were known diabetic. 24(18.90%) were having random blood sugar level (RBSL) >140 mg/dL. 52(40.94%) subjects were known hypertensive. 39(30.71%) subjects were having systolic blood pressure >140 mm Hg and 21(16.54%) were having diastolic blood pressure > 90 mm Hg.

Conclusion

Auto rickshaw drivers are at greater risk of developing hypertension and diabetes because of their unhealthy lifestyles. There is clear need for focused interventions to promote healthier lifestyles among auto rickshaw drivers. Early precautionary measures, regular medical check-up and prompt interventions are necessary to prevent and control these diseases among them.

Keywords: Hypertension, Diabetes, Auto Rickshaw Driver

Introduction

Auto rickshaw drivers are prone to various occupational related health problems which include both non-communicable and communicable diseases. These workers involve prolonged sitting in a fixed posture and also expose to number of harmful factors such as noise, vibrations, glare, dust, heat, lack of rest, lack of adequate sleep and which over the period of time may lead to various occupational diseases. Their

working conditions have been linked to increased risk of chronic diseases like hypertension and diabetes. Auto rickshaw drivers working in metropolitan cities are prone to respiratory tract infections, deafness, musculoskeletal health problems, diabetes mellitus, hypertension, stress and anxiety.[1] Irregularity of meals, bad posture while driving and sedentary lifestyle predispose them to many non-communicable diseases.[2] Driving an auto rickshaw has become one of the most common and easiest ways of earning a living, particularly for educated unemployed youths.[3] Driving as a task involves vibrations which could directly lead to musculoskeletal health issues among auto rickshaw drivers. Sitting in the driving posture exerts considerable forces on the spine which can lead to backache, neck problems, pulled muscles and general stiffness.[4]

Auto rickshaws are a common means of public transportation in many countries in the world. It is a motorised version of the traditional pulled rickshaw or cycle rikshaw. The auto rickshaw drivers spend most of their time during working hours in roadway and/or in auto stand to wait for passengers. Therefore, these drivers are at high risk to be affected by some risk factors which lead to various health issues like diabetes and hypertension.[5] Health has been a major cause of concern among auto rickshaw drivers. Auto rickshaw drivers spend a considerable amount of time in an environment full of pollutants and risk factors which are responsible for cardio-vascular, respiratory, hearing, gastro-intestinal and other diseases among them.[6] Health is a major concern among auto rickshaw drivers working in urban areas. They suffer from various health issues due to their working conditions.[7] Auto rickshaw drivers face many health problems because of the nature of their working atmosphere.[8] The auto rickshaw drivers spend majority of their time in polluted, noisy and dangerous environment. This harmful environment includes pollutant gases, continuous noise and whole-body vibrations as well as harmful lifestyle like irregularity of meals, bad posture while driving and stressful occupational conditions due to their working conditions lead to cardio-vascular and other health problems.[9]

In India auto rickshaws are important mode of public transport in urban, semi-urban and rural areas. Auto rickshaw drivers are at great risk of developing cardiovascular disease like hypertension and diabetes because of their harmful lifestyles.[10] The health of the auto rickshaw drivers has always been closely linked with their driving occupation. These workers are exposed to harmful environment and stressful occupational conditions. That is why they are at risk of various occupational hazards including hypertension and diabetes.[11] In view of this, study was conducted among auto rickshaw drivers in Mumbai Metropolitan Region to assess their level of blood pressure and random blood sugar. Also to find the proportion of known hypertensive and diabetic among auto rickshaw drivers.

Materials And Methods

A cross-sectional study was conducted using purposive sampling method among auto rickshaw drivers working in Mumbai Metropolitan Region in the month of January 2024. Necessary permissions and approvals were obtained. Inclusion and exclusion criteria were defined. Camp approach was adopted here. Mahadik VJ et al[1] conducted study among auto rickshaw drivers in Navi Mumbai in which they observed prevalence of hypertension and diabetes, 4.4% and 6.3% respectively among these workers. On the basis of this observation the estimated sample size for the study was 64 or 90 respectively. However, 127 auto rickshaw drivers attended the camp and all were included in the study after obtaining informed consent.

Age and gender of the subjects was recorded in the predesigned and pretested proforma. Blood pressure of the subjects was measured as per the World Health Organisation guidelines and random blood sugar level (RBSL) of each subject was tested and recorded in the proforma. Auto rickshaw drivers suffering from hypertension and diabetes mellitus were noted. Subjects with random blood sugar level above 140 mg/dL, systolic blood pressure above 140 and diastolic blood pressure above 90 mm Hg were enumerated. Data was entered in Microsoft Excel and analysed. Descriptive and inferential statistics was applied. Standard error of difference between two proportions test of significance was used to interpret the results. The statistical level of significance was fixed at $p<0.05$.

Results

127 auto rickshaw drivers took part in the study, of which 103(81.10%) were males and 24(18.90%) were females. 87(68.50%) subjects were in the age group of 18-58 while 40(31.50%) were >58 years of age. The

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range, mean, standard deviation (SD) of age in years, random blood sugar level (RBSL), Systolic and diastolic blood pressure (BP) with reference to whole group, males and females is shown in Table-1. The mean random blood sugar level of whole group was 151.80 mg/dl. The mean systolic and diastolic blood pressure levels of whole group were 134.61 and 82.67 mm of Hg respectively.

Table-1 Range, Mean and SD of Age in years, RBSL in mg/dL, Systolic and Diastolic Blood Pressure in mm of Hg of the subjects (n=127)

Variables	Overall(n=127)			Male (n=103, 81.10%)			Female (n=24, 18.90%)		
	Range	Mean	SD	Range	Mean	SD	Range	Mean	SD
Age	24-85	51.54	13.46	27-85	52.67	13.15	24-75	46.67	13.96
RBSL	76-505	151.80	93.43	76-505	155.59	96.74	81-376	135.50	77.28
Systolic BP	88-195	134.61	21.49	98-195	137.75	20.60	88-179	121.12	19.86
Diastolic BP	50-115	82.67	11.16	50-115	83.87	11.35	60-96	77.50	08.73

Of the 127 subjects, 27(21.26%) were known diabetics. Of the 27 known diabetics, 19(70.37%) were in the age group of 18-58 while 08(29.63%) were >58 years of age (p=0.05). 23(85.19%) known diabetics were males while 04(14.81%) were females (p<0.05). Of the 127 subjects, 24(18.90%) were having random blood sugar level (RBSL) >140 mg/dL. Of the 24 with RBSL >140 mg/dL, 16(66.67%) were in the age group of 18-58 while 08(33.33%) were >58 years of age. 21(87.50%) males while 03(12.50%) female subjects were having RBSL >140 mg/dL (p<0.05). (Table-2)

Table-2 Age and gender wise distribution of known diabetics and subjects with RBSL >140 mm/dL (n=127)

Variables	Categories (n=127)			Known Diabetics n=27 (21.26%)		RBSL > 140 mm/dL n=24 (18.90%)	
		n	%	n	%	n	%
Age	18-58	87	68.50	19	70.37	16	66.67
	>58	40	31.50	08	29.63	08	33.33
P value				0.05		0.12	
Gender	Male	103	81.10	23	85.19	21	87.50
	Female	24	18.90	04	14.81	03	12.50
P value				0.00		0.00	

Of the 127 subjects, 52(40.94%) were known hypertensives. Of the 52 known hypertensives, 34(65.38%) were in the age group of 18-58 while 18(34.62%) were >58 years of age (p<0.05). 47(90.38%) known hypertensives were males while 05(09.62%) were females (p<0.05). 39(30.71%) subjects were having systolic BP >140 mm Hg, of which 26(66.67%) were in the age group of 18-58 years while 13(33.33%) were >58 years of age (p=0.05). Of the 39 subjects with systolic BP >140 mm Hg, 36(92.31%) were males and 03(07.69%) were

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females (p<0.05). Of the 127 subjects, 21(16.54%) subjects were having diastolic BP >90 mm Hg, of which 16(76.19%) belong to 18-58 years age group while 05(23.81%) were >58 years of age (p<0.05). Of the 21 subjects with diastolic BP > 90 mm Hg, 20(95.24%) were males and 01(04.76%) was female (p<0.05). (Table-3)

Table-3 Age and gender wise distribution of known hypertensives and subjects with systolic BP >140 mm Hg and diastolic BP >90 mm Hg (n=127)

Variables	Categories (n=127)			Known Hypertensives n=52(40.94%)		Systolic BP > 140 mm Hg n=39(30.71%)		Diastolic BP > 90 mm Hg n=21(16.54%)	
		n	%	n	%	n	%	n	%
Age	18-58	87	68.50	34	65.38	26	66.67	16	76.19
	>58	40	31.50	18	34.62	13	33.33	05	23.81
P value				0.03		0.05		0.03	
Gender	Male	103	81.10	47	90.38	36	92.31	20	95.24
	Female	24	18.90	05	09.62	03	07.69	01	04.76
P value				0.00		0.00		0.00	

Discussion

In our study in Mumbai Metropolitan Region, we observed, of the 127 auto rickshaw drivers, 27(21.26%) were known diabetic and 52(40.94%) were known hypertensive. Of the 27 known diabetic, 23(85.19%) were males and 04(14.81%) were females. Of the 52 known hypertensive, 47(90.38%) were males and 05(09.62%) were females. Mahadik VJ et al[1] in their study among 159 auto rickshaw drivers in Navi Mumbai observed, 10(6.3%) subjects were suffering from diabetes and 07(4.4%) were from hypertension. Asma Vimala Thomas et al[2] in their study among auto rickshaw drivers in Hyderabad observed, 14.00% subjects were having diabetes and 15.00% were suffering from hypertension. Thus, diabetes and hypertension are prevalent among auto rickshaw drivers working in various cities.

Mahadik VJ et al[1] in their study in Navi Mumbai among 159 autorickshaw drivers observed the mean systolic blood pressure and diastolic blood pressure were 124.27(SD±12.01) mm Hg and 78.90(SD±7.39) mm Hg respectively, except in 07 known hypertensives. Blood pressure was normal (<120 systolic blood pressure/<80 diastolic blood pressure mm Hg) in 37 (24.30%) of the 152 study subjects. Prehypertension (120-139 mm hg systolic blood pressure or 80-90 mm Hg diastolic blood pressure) was seen in 90(59.20%) autorickshaw drivers, hypertension stage I (140-159 systolic blood pressure or 90-99 diastolic blood pressure mm Hg) in 23 (15.10%), and hypertension stage II (>160 systolic blood pressure or >100 diastolic blood pressure mm Hg) in 2(1.3%). The overall occurrence of hypertension in the study group was 20.10% (7+23+2=32/159).

Thangjam Chitralekha Devi et al[3] in their study in Imphal, Manipur, observed, individuals who have been driving for more than ten years are at a significantly greater risk for diabetes, obesity, hypertension compared to those who have been driving up to five years. They are also at greater risk for adverse health problems such as hypertension and high blood glucose level. In our study we also observed many auto rickshaw drivers were suffering from hypertension and diabetes mellitus. We observed,151.80 mg/dL mean random blood sugar level of whole group. The mean systolic and diastolic blood pressure levels of whole group were 134.61 and 82.67 mm of Hg respectively in our study. SS Chaudhary et al[9] in their study among 296 auto rickshaw drivers in Nagpur city, observed, 37.16% subjects had pre-hypertension and 35.14% subjects had hypertension.

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Animesh Gupta et al[10] conducted study among auto rickshaw drivers working in Mangaluru and observed the mean age of study participants was 42.75±10.26. The prevalence of physical inactivity, hypertension and diabetes were 70%, 29.6% and 14.2% respectively in their study. In our study, it is observed that 52(40.94%) subjects were suffering from hypertension and 27 (21.26%) were from diabetes. Veena Melwani et al[11] in their study among auto rickshaw drivers in Bhopal observed, 6.67% subjects were suffering from hypertensin, 3.67% were suffering from diabetes and 1% were having both hypertension and diabetes.

This study focuses on level of blood pressure and random blood sugar level among auto rickshaw drivers in Mumbai Metropolitan Region. Also, it highlights on known hypertensive and diabetic auto rickshaw drivers. There is a need of study on larger sample size which will also focus on concerned risk factors among these workers so that appropriate measures can planned to promote health of these workers.

Conclusion

Auto rickshaw drivers are at greater risk of developing hypertension and diabetes because of their harmful lifestyles. Various studies have observed that these workers are very much susceptible to these diseases. There is an urgent need for monitoring regularly and institutionalisation of measures to prevent these diseases. Early precautionary measures, regular medical check-up and prompt interventions are necessary to prevent and control these diseases among them.

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