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A study of cardiovascular disease risk factor among auto: Rickshaw drivers in Gwalior city, M.P.

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Abstract
Introduction: Auto- rickshaws are a common means of public transportation in many countries in the world as well as in India. The Auto-Rickshaw Drivers spend majority of their time in an environment which is polluted, noisy and dangerous and are exposed to pollutant gases, continuous noise and whole-body vibration as well as harmful lifestyle like irregularity of meals, bad posture while driving and stressful occupational conditions due to their working conditions. These work-related harmful factors may be associated with various cardio-vascular problems which can have driving safety implications.
Materials and Methods: The present study has been undertaken in Gwalior city, Madhya Pradesh, India.
Study Population: 300 Auto-rickshaw drivers working in Gwalior city were the study population.
Sampling: There are 80 registered (registered in auto rickshaw union of Gwalior) auto rickshaw stands in Gwalior. 40 stands were selected by simple random sampling.
Study Design: It was a cross-sectional study conducted among auto-rickshaw drivers (ARDs) working in Gwalior city.
Result: 42% Subjects had habit of tobacco chewing, while 54% subjects had habit of tobacco smoking, 52% had habit of alcohol consumption. Prevalence of overweight was 26% and central obesity was 6%. Prevalence of hypertension was 23% while prehypertensives were 37%.
Conclusion: The study results indicated high proportional behavioral and anthropometric risk factors of cardiovascular diseases in auto rickshaw drivers. This high magnitude of Cardio Vascular Disease risk factors can put this working group at the risk of increased cardiovascular morbidity and mortality at relatively younger age.

Keywords: ARD (auto-rickshaws driver), BMI (body mass index), CVD (cardiovascular disease)

Introduction

Auto- rickshaws are a common means of public transportation in many countries in the world as well as in India. They are also known as three-wheeler, tempo, tuktuk, trishaw, auto, rickshaw, auto rick, Bajaj, rick, tricycle, mototaxi, baby taxi or lapa [1]. An Auto rickshaw is usually a three-wheeled cabin cycle and used as a vehicle for hire. It is a motorized version of the traditional pulled rickshaw or cycle rickshaw.

The Auto-Rickshaw Drivers spend majority of their time in an environment which is polluted, noisy and dangerous [2] and are exposed to pollutant gases, continuous noise and whole-body vibration as well as harmful lifestyle like irregularity of meals, bad posture while driving and stressful occupational conditions due to their working conditions [2]. These work-related harmful factors may be associated with various musculo-skeletal, gastro-intestinal, respiratory, cardio-vascular, hearing and other problems which can have driving safety implications [2, 3].

Taxi industry is quite different from conventional occupations; the employee has ambiguous work hours and the income fluctuates on a daily basis [4, 5]. In recent times, researchers have begun to take an integrative approach to improve workplace health and safety [6] thus the importance of researching workplace health and safety in unconventional industry such as taxi driving may be pivotal in promoting health and safety behavior.

Materials and Methods

The present study has been undertaken in Gwalior city, Madhya Pradesh, India. It is located 319 kms south of Delhi the capital city of India. As of 2011's India census Gwalior has a population of 15, 649, 81 [7].

Study Population: It was learnt that approximately 7000 auto-rickshaw drivers were working in Gwalior city at the time of study [8]. 300 Auto-rickshaw drivers working in Gwalior city were the study population.

Sampling: There are 80 registered (registered in auto rickshaw union of Gwalior) auto rickshaw stands in Gwalior. 40 stands were selected by simple random sampling. Each day we visited 2 stands and interviewed 2 Auto-rickshaw drivers daily from each stand and collected required information from the subjects till required sample size was met. We took all the measures to avoid duplication.

Study Design: It was a cross-sectional study conducted among auto-rickshaw drivers (ARDs) working in Gwalior city.

Duration of study: The study was done from. July 1st 2013 to July 1st 2014 (one year).

Inclusion Criteria

1. Auto-rickshaw drivers working as full time drivers from

last 2 years were included in the study.
2. Those who were should be willing to participate were included in the study.

Exclusion Criteria
1. Auto-rickshaw drivers working as full time drivers for less than 2 years were excluded from the study.
2. Auto-rickshaw drivers who did not give consent were excluded from the study.
3. Auto-rickshaw drivers who were part time, occasional drivers not included in the study.

Data Collection and Measurement
There were two components of the study for the data collection and measurement.

i) Questionnaire based survey
A Predesigned and Pretested questionnaire was prepared for collecting socio-demographic information, occupational characteristics and personal habits including smoking tobacco, smokeless tobacco, alcohol consumption & physical activity.

ii) Anthropometric measurements and physical examination
Standard instruments and procedures were used for anthropometric measurements. Ocular examination was done on all the respondents. These included visual acuity test,which was done in the open field during the day, using the Snellen's chart at 6 meters from the respondents. Each eye was tested separately unaided and with pinhole in cases where visual acuity was less than 6/6.
Institutional ethical committee of the Gajra Raja Medical College, Gwalior approved the study. Free and informed consent was obtained for the questionnaire based interview, anthropometric measurements and physical examination.
We referred newly detected patients with hypertension, obesity, respiratory, or gastrointestinal illness to the Medicine Department of our hospital for further management.

Results
The present study shows sociodemographic profile of Auto-rickshaw drivers in Table 1. Table2 shows occupational characteristics of the auto rickshaw drivers. Figure 1 shows distribution of ARDs according to their personal habits/addictions. 42% Subjects had habit of tobacco chewing, while 54% subjects had habit of tobacco smoking, 52% had habit of alcohol consumption.
Table 3 shows distribution of Auto-rickshaw drivers according to their BMI Table 4 shows the distribution of study subjects according to their blood pressure (BP) levels.

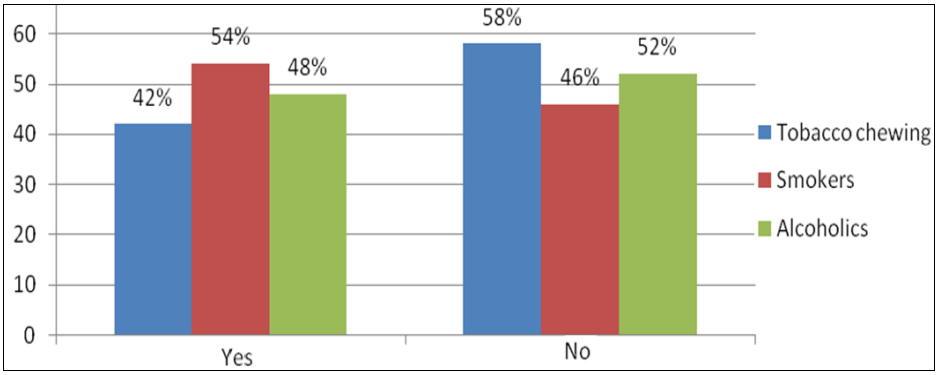

Fig 1: Distribution of study subjects according to their personal habits/addictions

Table 1: socio demographic profile of auto-rickshaw drivers

Characteristic	Groups	Number	Percentage (%)
Age	18-27	35	11.6
	28-37	78	26
	38-47	124	41.33
	48-57	54	18
	>58	9	3
Sex	Male	300	100
	Female	0	0
Religion	Hindu	237	79
	Muslim	54	18
	Others	09	03
Marital Status	Married	267	89
	Unmarried	33	11
	Divorced	0	0
Education	Illiterate	45	15
	Primary	60	20
	Middle	66	22
	High School	69	23
	Higher secondary	36	12

	Graduation	21	7
	Post Graduation	03	1

Table 2: Occupational Characteristics of the Auto rickshaw Drivers

Work Related Variable	Groups	Number	Percentage
Work Experience(Yrs)	2 -5 Yrs	48	16
	5-10 Yrs	84	28
	10 -15 Yrs	57	19
	15-20 Yrs	60	20
	>20 Yrs	51	17
Working hr/day	< 6hr	03	01
	7-8 hr	81	27
	9-10 hr	102	34
	>10 hr	114	38

Table 3: Distribution of Study Subjects according to their BMI

S. No	Body Mass Index	No. of Subjects	Percentage
1	< 18.5Kg/M^2	27	9%
2	18.5-24.99 Kg/M^2	177	59%
3	25-29.99Kg/M^2	78	26%
4	>30 Kg/M^2	18	6%
5	Total	300	100

Table 4: Distribution of Study Subjects according to their B.P.

S. No	Blood Pressure levels	No. of Subjects	%
1	SBP<120mmhg & DBP<80mmHg	120	40
2	SBP 120-139mmhg & DBP80-89mmHg	111	37
3	SBP 140-159mmhg & DBP90-99mmHg	60	20
4	SBP >160mmhg & DBP>100mmHg	09	03
5	Total	300	100

Discussion

The aim of the study was to integrate the various factors that influence cardiovascular disease of Auto-rickshaw drivers into theoretical model and it shows work environment, stress, and personality characteristics directly influence auto Rickshaw drivers health.

In the present study, the maximum number of Auto Rickshaw Drivers were in the age group between 38-47 yrs age i.e 41.33% % followed by 28-37yrs i.e.26%. Chaudhary *et al*. [9] stated in his study mean age of auto rickshaw drivers was 41.70±9.05 yrs with a range of 20-65 yrs.

In this study all Auto Rickshaw Drivers were males i.e. 100%. It was similar from the study of Bawa MS *et al*. [10]

In the present study, the maximum number of Auto Rickshaw Drivers were educated upto high school i.e 23% followed by 22% educated upto middle school. Rewar S *et al*. [11] stated in his study 25.5% drivers were illiterate,41.5% were able to read and write, 11.7% had studied up to 10th class,5.3% had studied up to 12th class.

In the present study, the findings of work experience and working hours of Auto Rickshaw were similar to the study of Anthony and Jillian [12] with respect to work experience and work hours. This similarity gives perception that working hours of taxi driving are similar across countries like India and Australia. The other studies which have similar findings are Miyamoto *et al*[13] and chen *et al*. [14].

In the present study, prevalence of smoking among ARDs was around 54%, Prevalence of smokeless tobacco in our study is 42% and the prevalence of alcohol use was 48% in our study. A study conducted by Rewar S *et al*. [11] found that Prevalence among auto rickshaw drivers for consumption of tobacco products was very high (87%). Auto rickshaw drivers mostly used tobacco in the form of Gutkha (72%) and bidi (40%) in comparison to other products.

In the present study, Prevalence of overweight was 26% and central obesity was 6%. Chaudhary SS *et al*. [9] in their study found that 14.86% subjects were overweight and another 3.38% had obesity.

In the present study, prevalence of hypertension was 23% while prehypertensives were 37%. Arjun Lakshman *et al*. [17] a study stated that, 16.8% had normal BP, 41.9% had pre-hypertension and 41.3% had hypertension.

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Conflict of interest: None

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