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Research Article

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Evaluation of Socio-demographic Profile, Working Condition and Health of E-rickshaw Drivers in Udaipur City

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ABSTRACT

Background: Work hazards have been a critical concern in the driving industry, particularly in E-rikshaw drivers. This study focuses on several health issues that E-rikshaw drivers encounter due to their occupation.

Methods: This community-based cross-sectional study was conducted in Udaipur city, Rajasthan, among 130 E-Rikshaw drivers from 1st January to 1st April 2023. Collected data entered in an Excel sheet and Epi-Info software was used to analyze the data.

Results: The maximum number of E-rikshaw drivers in the present study was 38-47 years (41.33%), and all were males (100%). Most E-rikshaw drivers' educational qualifications were up to high school (23%). The majority of E-rikshaw driver's work experience and working hours were 5-10 years' experience (28%) and worked for >10 hours per day (38%), and the most common (54%) addiction among them was smoking. In the present study, the most common morbidity among participants was found to be Gastro-intestinal problems (n=78); 34 were overweight, and 9 had central obesity. Prevalence of hypertension was 30 (23%), while 48 were pre-hypertensive. Whereas eye checkups revealed most of the subjects 108(83.07%), had no visual impairment.

Conclusion: The present study revealed that most E-rikshaw drivers were adult males and most were in driving occupation for 5-10 years and worked for >10 hours per day. Alcohol consumption was more prevalent and gastro-intestinal problems were prevalent health issues faced, whereas one-third of the population had obesity and hypertension.

Key-words: Alcohol consumption, Driving industry, E-rikshaw drivers, Morbidity, Work hazards

INTRODUCTION

"Work-related diseases" have a variety of causes, and in addition to other risk factors, elements in the workplace may contribute to developing these conditions. In India, the auto-rickshaw is the primary form of public transportation in cities. Nowadays, e-rikshaws have been introduced with the vision of replacing traditional auto-rikshaws in the future [1].

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The Nimbkar Agricultural Research Institute made one of the earliest attempts to create an electric rickshaw in the late 1990s [2]. These e-rickshaws are extensively dispersed over India, gaining popularity in 2011. The design is now much different from cycle rickshaws. E-rickshaws are now an essential means of subsistence for many in India. On Indian streets, they are accepted because of their excellent efficiency and low cost [2].

The rikshaw drivers spend much of their time in an environment that is polluted, noisy, and dangerous [3], and they are exposed to harmful lifestyle factors like irregular eating patterns, poor posture while driving, and stressful work environments due to their jobs [3]. These potentially dangerous work-related factors may be linked to gastrointestinal, musculoskeletal, respiratory, hearing,

cardio-vascular, and other issues impacting driving safety [3,4].

The transport sector is very different from traditional employment; employees' working hours are uncertain and their income varies daily [5,6]. The focus group described various health concerns that E- rikshaw drivers attributed to their occupation, including chronic back and leg pain, cardiovascular diseases, sleep deprivation, diabetes, kidney diseases and eye problem. Researchers have recently started using an integrative strategy to enhance workplace health and safety [7]. To encourage safe work practices, it is crucial to research workplace safety and health in unconventional sectors such as taxi driving.

MATERIALS AND METHODS

Study Area- The present study was conducted in Udaipur, in the southernmost part of Rajasthan, near the Gujarat border. It is between two major Indian metro cities– about 800 km from Mumbai and 660 km from Delhi.

Study Population- It was found that approximately 142 E-rikshaw drivers were working in Udaipur city during the study period [8]. All E-rikshaw drivers who appeared healthy and consented to participate in the study were included.

Sample Size- The sample size is not calculated because all E-rikshaw drivers are included in the study (universal sampling technique is followed).

Study Design was a community-based, prospective, observational, cross-sectional study.

Study Duration- The study was conducted 6 months from 1st December 2022 to 1st June 2023.

Data Collection- The study was started after getting the ethical clearance from the ethical clearance committee of the Pacific Medical College and Hospital, Udaipur. A list of rikshaw-stands was located and a road map was prepared. Accordingly, visits were planned. The researcher visited two stands per day and interrogated 2 E-rickshaw drivers per day. One-to-one interview was done to collect socio-demographic information, and the study subjects' general physical examination and measurements were done after taking informed oral consent. Newly detected patients with obesity, hypertension, respiratory, or gastro-intestinal illness were referred to the Medicine Department of the Pacific Medical College and Hospital, Udaipur, for further management. In contrast, patients with low vision/visual impairment were referred to the Ophthalmology Department and those with Musculoskeletal problems were referred to the Orthopedic Department. Awareness was created regarding the personal protective equipment's, non-communicable disease screening Programme, and availability of deaddiction centers.

Inclusion criteria

1) E-rikshaw drivers who have worked full-time for the past two years.
2) E-rikshaw drivers who were ready to participate in the study.

Exclusion criteria

1) E-rikshaw drivers who have been working as full-time drivers for less than 2 years.
2) E-rikshaw drivers who refused to participate in the study.
3) Part-time or occasional E-rikshaw drivers.

Study Tool

Questionnaire-based survey- A predesigned and pretested questionnaire was created to gather data on socio-demographic information, personal habits, and occupational characteristics, including smoking tobacco, alcohol consumption, smokeless tobacco, and physical activity.

Examination of study subject- General physical examination of each subject was done and their health problem was enquired, if any. Based on these criteria researcher categorized health problems as:

- ✓ Gastrointestinal problem– vomiting, nausea, heart-burn, stomach pain.
- ✓ Musculo-skeletal problems include back pain, leg pain, and generalized body pain.
- ✓ Visual problem– blurred vision, color blindness, watering eye, burning eye, redness of eye.
- ✓ Respiratory problems include cough, sneeze, and difficulty breathing.
- ✓ Dermatological problems include sunburn, redness of skin, and itchy skin.

✓ Non-specific– Feeling uneasy but not able to identify any health problem.

Visual acuity testing-It was done on all the respondents in the open field during the day, using the Snellen's chart at 6 m from the respondents. Each eye was tested separately unaided and with pinhole in cases where visual acuity was less than 6/6. The researcher operationalized visual acuity definition as:

- No visual impairment – visual acuity of 6/6 - 6/18.
- Visual impairment - visual acuity of 6/24 - <3/60.

Anthropometric measurements- Standard instruments and procedures were used for anthropometric measurements.

Category	Body Mass Index
Under-weight	< 18.5 kg/m^2
Normal	18.5-24.99 kg/m^2
Over-weight	25-29.99 kg/m^2
Obesity	>30 kg/m^2

Blood pressure measurement- Study subjects were allowed to settle and feel comfortable sitting. The researcher took two readings at 15 min intervals. The average of these two readings was considered as the final reading.

Category	Systolic	Diastolic
Normal	<120mmHg	<80mmHg
Pre-hypertensive	120-129mmHg	<80mmHg
Stage-1 hypertension	130-139mmHg	80-89mmHg
Stage-2 hypertension	140-159mmHg	≥ 90mmHg

Statistical Analysis- The collected data were systematically entered in MS Excel software. The data was analyzed using Epi-info (version-7.2.5.0) software. Descriptive statistics were presented in terms of tables and figures. Frequency, mean, percentages and standard deviation were calculated for the variables.

Ethical Approval- The ethical clearance committee of the Pacific Medical College and Hospital, Udaipur approved the study methodology.

RESULTS

The study's objective was to include the several elements that affect the physical health of rickshaw drivers into a theoretical framework that demonstrates how personality traits, stress levels, and the workplace environment all directly impact drivers' health.

Maximum number of E-rikshaw drivers in this study were in the age group 38-57 years (69.23%). All of the E-rikshaw drivers were males (100%) and most of them were Hindu (69.2%). Most E-rickshaw drivers were educated up to high school (23.8%). The prevalence of smoking alcohol consumption among study subjects was around 61%, tobacco chewing and tobacco smoking were 23.07% and 15.3% (Table 1).

Table 1: Socio-demographic characteristics of E-rikshaw drivers

Characteristic	Groups	Number (n = 130)	Percentage (%)
Age (in years)	18-37	38	29.2
	38-57	90	69.23
	>58	2	1.5
Sex	Male	130	100
Religion	Hindu	90	69.2
	Muslim	30	23.07
	Others	10	7.6
Marital status	Married	113	86.9
	Unmarried	17	13.0
Education	Illiterate	20	15.3
	Primary	24	18.4
	Middle	30	23.07
	High School	31	23.8
	Higher secondary	14	10.7
	Graduation	10	7.6
	Postgraduation	1	0.7
Addiction	Alcohol consumption	80	61.5
	Tobacco-chewing	30	23.07
	Tobacco-smoking	20	15.3

Table 2 shows the occupational characteristics of E-rickshaw drivers. It was found that the majority (27.6%) of them had work experience of 5-10 years and worked for >10 hours per day (37.6%).

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Table 2: Occupational characteristics of the E-rickshaw drivers.

Work Related Variable	Groups	Number (n = 130)	Percentage (%)
Work Experience(years)	2-5	20	15.3
	5-10	36	27.6
	10-15	25	19.2
	15-20	28	21.5
	>20	21	16.1
Working hours/day	< 6	01	0.6
	7-8	35	26.9
	9-10	45	34.6
	>10	49	37.6

The common health problems of E-rickshaw drivers are tabulated in Table 3. Gastro-intestinal problems were the most common morbidity found in 78 participants, followed by musculoskeletal problems (n=64), respiratory problems (n=31), visual problems (n=28), and dermatological problems (n=10). Only 17 individuals did not have any health problems.

Table 3: Common health problems among study participants.

Current health problems	Number (n=130)
Gastro-intestinal problems	78
Musculo-skeletal problems	64
Visual problems	28
Respiratory problems	31
Dermatological problems	10
No health problems	17
Non specific	36

**134 study subjects had multiple health conditions.*

The health profile of E-rickshaw drivers was assessed in Fig. 1. Overweight was the most prevalent health condition seen in 34(26.15%) subjects and central obesity was seen in 9 (6.92%) subjects. The majority of them 76(58.46%) had normal weight. Hypertension was observed in 30(13%) subjects while prehypertensive in 48(36.92%). About 108(83%) subjects had no visual impairment (VA of 6/6-6/18), while 22 (16.92%) subjects had visual impairment (VA of 6/18-3/60). None of the subjects examined had blindness.

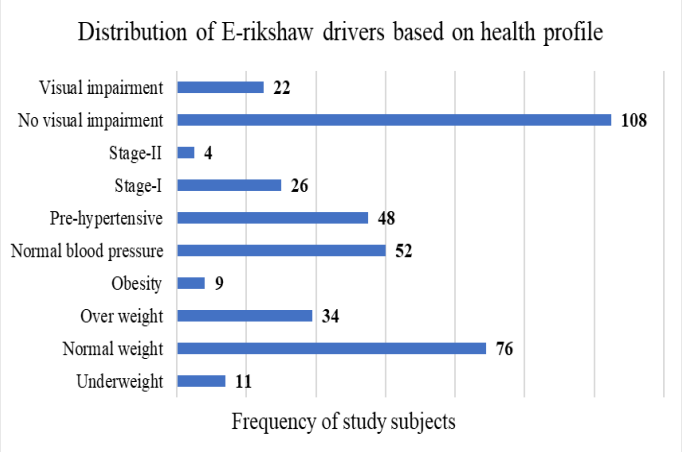

Fig. 1: Health profile of study subjects.

DISCUSSION

Chaudhary *et al.* [9] were 41.70±9.05 years with an age range of 20-65 years. All E- rikshaw drivers were males in the present study, corresponding to a similar survey of Kaul *et al.* [10]. Most E-rickshaw drivers in this study were educated up to high school. Melwani *et al.* [11] found a similar result where most drivers (25%) studied received education till high school, followed by 23% till middle school.

The work experience and working hours of the participants of this study were 5-10 years and >10 hours per day, respectively. This is consistent with a study by Jain *et al.* [12] that found similar results in terms of work experience and work hours. This similarity gives the perception that working hours of taxi driving are identical across the country. Other studies by Miyamoto *et al.* [13] and Chen *et al.*[14] showed similar findings.

The addiction pattern of enrolled E-rickshaw drivers mainly was alcohol consumption. However, tobacco chewing (20%) was observed as the most prevalent addiction, followed by tobacco smoking, and alcohol consumption among E- rikshaw drivers in a study conducted by Melwani *et al.* [11]. Devi *et al.* [15] reported eating paan was most common addiction, followed by alcohol consumption. Addiction patterns among E-rikshaw drivers differed from place to place depending on socio-cultural, economical, and political differences.

Gastro-intestinal problem was the most common morbidity, followed by musculoskeletal, respiratory, visual, and dermatological problems. Similar findings

were slated by Bawa *et al.* [10], where gastro-intestinal system was the most common system involved (62%) among the participants. Another study reported that 55.1% drivers had musculoskeletal disorders and backache was the most common musculoskeletal disorder found in 47.8% of E-rickshaw drivers [16].

Devi *et al.* [15] found the most prevalent health issue among E- rikshaw drivers was generalized body ache (51.57%), followed by eye problems (50.94%). A study conducted by Rajkumar *et al*. [17] revealed that the main symptoms observed in E-rickshaw drivers were cough (77%), eye irritation (80%), and breathlessness (54%).

In the present study, the prevalence of overweight was seen in 26.15% of subjects, whereas the majority of them 58.46% had normal weight. Chaudhary *et al.* [9] in their study found that 14.86% of subjects were overweight and another 3.38% were obese; these data are litter lower than those observed in this study. The prevalence of hypertension and prehypertension in this study was 13% and 36.92%, respectively. These results were a little lower than those observed by Lakshman *et al.* [18], they reported that 41.3% subjects had hypertension, 41.9% were pre-hypertensive and 16.8% had normal blood pressure.

No visual impairment was observed in 83% of subjects (VA of 6/6-6/18), while 16.92% had visual impairment (VA of 6/18-3/60). Oladehinde *et al.* [19] in their study found that the prevalence of visual impairment (VA<6/18) in the better eye without correction was 3.3% ±2.4. Refractive error was seen in 8.4% of the E-rickshaw drivers.

CONCLUSIONS

The study was conducted for a shorter time, and no follow-up of the study participants was done. The mental component was also not considered due to the limited study time. Further research with a long-time duration and large sample size followed by follow-up of study participants can clearly represent E-rickshaw drivers' sociodemographic profile, health status and working profile.

LIMITATION

The study was for shorter duration of time, and there was no follow-up of the study participants done, and mental component was not considered due to the limited time.

CONTRIBUTION OF AUTHORS

Research concept- Priyanka Kulkarni, Vishakha Parmar
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Supervision- Rajendra Kumar Gaur, Swapnil Jain
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Data collection- Priyanka Kulkarni, Vishakha Parmar, Neha Singh
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Critical review- Rajendra Kumar Gaur
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Final approval- Rajendra Kumar Gaur

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