

## Socio-demographic and Occupational Characteristics of Auto Rickshaw Drivers with Low Back Pain

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### Abstract

### Original Research Article

**Introduction:** Work-related musculoskeletal disorders, especially low back pain, cause substantial economic losses to individuals as well as to the community. **Aim and objective:** To determine socio-demographic characteristic of the proportion of auto rickshaw drivers having low back pain. **Material & Methods:** This study was a descriptive type of cross-sectional study. Study was done in four C.N.G stand (Mirpur-11 stand, Banani-11 stand, Tongi station road, Mirpur-10 stand) and two garages (Ibrahimpur garage and Khilgaon garage) in Dhaka city. The study period extends from January 1st to December 31st of 2014. C.N.G based Auto rickshaw drivers not less than 25 years of age were selected as a study population of this study. Sampling was done purposively. Purposively 220 Auto rickshaw drivers from four C.N.G stands and two garages were included in the study with fulfilling the above-mentioned enrollment criteria were included in the study. The data entry was started immediately after completion of data collection. Data processing and analyses were done using SPSS (Statistical Package for Social Sciences) version 19. Data were analyzed according to the objectives of the study. **Results:** This study was carried out to find out low back pain and disability among the auto rickshaw drivers in Dhaka city. Two hundred and twenty populations were selected for the study. The age of the respondents ranged between 25 and 60 years with a mean of  $34.95 \pm 7.732$  years and std. Dev. = 7.732. Major proportion of respondents was in age group of 31 to 40 (45.5%) years and below 30 years (35.0%) years whereas around 19.5% respondents was in above 40 years' age group. Most of the respondents were can sign only (42.3%) and primary passed (20.9%) whereas some respondents (8.2%) crossed the secondary level. Most of the respondent's income were below 10000 and 10001 to 15000 taka (48.2%) and (47.7%) respectively while only 4.1% respondents earn above 15000 takas only. Majority of the respondents were married (92.3%) and Muslim (98.2%) Occupational characteristics of the respondents shown in Table III reflects that, majority of the respondent's seat were comfortable (80.5%) and similar proportion of the respondents were satisfied with their job. Among the respondents who were not satisfied (19.5%) with their job about one third (30.2%) told due to risky job while some told due to low income (14.0%) and more than one reason (16.3%) and 34.9% was in others. **Conclusion:** Low back pain is a common and major problem in all over the world. Low back pain related disability cause substantial economic losses to individual as well as to the community.

**Keywords:** Musculoskeletal Disorders, Low Back Pain, Socio-Demographic Characteristic, Rickshaw Drivers.

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## INTRODUCTION

Low back pain (LBP) is a significant problem in society. In the general population back pain (BP) is a common and costly problem. Research shows that 80% of the population will suffer from lower back pain (LBP) at some time in their lives. Generally, it is commonly occurring in between ages 25 to 50 years [1]. According to Horvath *et al.* [2]. European review article

the prevalence of back pain in ranged between 14% and 42%, whereas lifetime prevalence was between 51% and 84% and the higher prevalence are found between the ages of 50 and 64. It was estimated that the point prevalence rate in North America is 5.6%. In 2003, the 1-year-period prevalence in the general population was 44% in the Netherlands and almost one-fourth of the employed population with LBP reported sickness leave in the past year [3]. Plouvier *et al.*, [4] mentioned that in

everyday life LBP is the most common complaint in adult population. An adult person experienced a higher prevalence of severe back pain and when the age increases the persistence of low back pain become more frequent. Peterson *et al.* [5] stated that age is an important predictor of LBP. As the age increases the frequency and severity of spinal degeneration increases which can be visualized in radio-graphically. At any given time about 20% of the adult population experiences an episode of LBP. A systematic review of the global prevalence of low back pain showed that it is a major problem throughout the world and is most common among females and persons ages between 40-80 years [6]. Chronic LBP is considered as a major public health issue which causing disability of the elderly people in most developed countries. LBP has tendency of becoming persistent or chronic that usually lead to disability. In this study, a questionnaire survey was conducted among driver's truck, bus, car, auto and tempo drivers of Pondicherry to determine the actual situation of drivers' low back pain from the perspective of their working conditions [7]. Many researchers have already reported the high risk for LBP and various spinal disorders among professional drivers of vehicles, such as bus, truck, and tractor and so on. It is thought that specific factors related to vehicle driving and work environments might influence the occurrence of LBP. Though there have been only several reports regarding drivers, a significantly elevated 1-yr prevalence of LBP (51%) was reported in taxi drivers. The relatively confined space within taxicabs or auto, tempo may put drivers at great risk for LBP, as biomechanical studies have shown that driving activities within automobiles can impose postural strain on lumbar spines [8]. After go through various studies I have found positive associations between exposure to whole-body vibration and development of low back pain (LBP) among occupational drivers including truck, bus, car, auto and tempo drivers with some reporting on the effects of shock loading to the spine [9]. Auto rickshaws are the major means of public transport. Guntur an urban city of Andhra Pradesh around ten thousand people have settled down as auto rickshaw drivers. City is highly populated with most of the roads poorly maintained. Most of the auto-rickshaw drivers are accustomed to accommodating passengers in front cabin due to poor traffic surveillance in the city. They allow the passengers to sit to their left side since the construction of these auto-rickshaws does not permit them to accommodate the passengers to their right. There is extensive literature quoting the fact that motor vehicle drivers (light and heavy vehicle drivers) are vulnerable to work related musculoskeletal disorders due to various factors like postural stress, exposure to vibrations and so on. Professional drivers have a higher prevalence of occupational disorders and disability than other groups [10]. In our country context C.N.G based auto rickshaws are not so heavy vehicles and those who drive it vibratory movement not as a main factor development of low back pain. It is true they lead a very

busy life in their working time and those who drive in a stand they took patient in their driving compartment. It makes their posture poor for a long period. Construction of the auto-rickshaws with a relatively smaller driver's cabin and accommodation of passengers in driver's cabin results in postural stress to maintain balance and stability. Besides, duration of work and driver's seat vibrations is also contributing to the occurrence of work related musculoskeletal disorders in auto rickshaw drivers. Existing literature makes it clear the occurrence of work related musculoskeletal disorders in drivers. Literature to establish the association of possible risk factors is not sufficient at present. Researchers reported existence of positive relationship between discomfort, injury, risk of low back pain and duration of exposure to whole body vibration. Mechanical energy transmission of vibrations is dependent on body position and muscle contractions [11]. Pain is an unpleasant sensory and emotional state or feeling or discomfort associated with actual or potential tissue damage that felt in the mind which is arising in a part of the body. In other words, it is a subjective sensation and defense mechanism designed to make the subject protect an injured part from the further damage. More than 98% of patient have identifiable pattern of pain that are diagnosed as uncomplicated pain problem in back. The mechanical pain usually response to movement or position and typically it is intermittent in nature [12]. Therefore, this study will help to point out ergonomic factors which cause low back pain. These results may help the drivers to continue their profession with less chance of developing low back pain and thus can avoid disability.

## OBJECTIVES

### a) General objective

- To assess socio-demographic characteristic of auto rickshaw drivers having low back pain.

### b) Specific Objectives

- To find out percentage of disability among the respondents those who have low back pain.
- To determine occupation related factors among the respondents.

## METHODOLOGY AND MATERIALS

This study was a descriptive type of cross-sectional study. Study was done in four C.N.G stand (Mirpur-11 stand, Banani-11 stand, Tongi station road, Mirpur-10 stand) and two garages (Ibrahimpur garage and Khilgaon garage) in Dhaka city. The study period extends from January 1st to December 31st of 2014. C.N.G based Auto rickshaw drivers not less than 25 years of age were selected as a study population of this study. Sampling was done purposively. Purposively 220 Auto rickshaw drivers from four C.N.G stands and two garages were included in the study with fulfilling the above mentioned enrollment criteria were included in the study. The study was done through collection of

data using questionnaire and neither any intervention nor any invasive procedure was undertaken. However, prior to initiation of the study ethical clearance was taken from appropriate Ethical Committee. After explaining the purpose of the study to the respondents by the researcher himself and taking verbal consent, data were collected by face to face interview ensuring privacy and confidentiality of the Auto rickshaw drivers. Collected data were checked and verified at the end of work in each day. An interview administered questionnaire was used for data collection. The questionnaire was developed using the selected variables according to the specific objectives. The questionnaire was developed in English and then translated it into Bangla. In this questionnaire in one part also used Oswestry Disability scale for measuring pain related disability. A check list was used for observation, weighing scale for weight and measuring tape for height. Questionnaire was pretested and then finalized after necessary modification according to the findings of pretesting. At the end of each day of data collection, each questionnaire was checked to see whether it was filled completely and consistently. The data entry was started immediately after completion of data collection. Data processing and analyses were done using SPSS (Statistical Package for Social Sciences) version 19. Data were analyzed according to the objectives of the study. The test statistics used to analyze the data were descriptive statistics, Chi square ( $\chi^2$ ). Level of significance was set at 0.05. The results were presented in the form of tables, graphs & chart.

#### Inclusion Criteria

- Auto rickshaw driver age not below 25 years.

#### Exclusion Criteria

- Working experience less than two years.
- Unwilling to participate.
- Severely mentally disoriented.

## RESULTS

This study was carried out to find out low back pain and disability among the auto rickshaw drivers in Dhaka city. Two hundred and twenty populations were selected for the study. The age of the respondents ranged between 25 and 60 years with a mean of  $34.95 \pm 7.732$  years and std. Dev. = 7.732 (Fig 1). Table I shows that, major proportion of respondents was in age group of 31 to 40 (45.5%) years and below 30 years (35.0%) years whereas around 19.5% respondents was in above 40 years' age group. Most of the respondents were can sign only (42.3%) and primary passed (20.9%) whereas some respondents (8.2%) crossed the secondary level. Most of the respondent's income were below 10000 and 10001 to 15000 taka (48.2%) and (47.7%) respectively while only 4.1% respondents earn above 15000 takas only. Majority of the respondents were married (92.3%) and Muslim (98.2%) (Table II). Occupational characteristics of the respondents shown in Table III

reflects that, majority of the respondent's seat were comfortable (80.5%) and similar proportion of the respondents were satisfied with their job. Among the respondents who were not satisfied (19.5%) with their job about one third (30.2%) told due to risky job while some told due to low income (14.0%) and more than one reason (16.3%) and 34.9% was in others. Occupation related factors (Table IV) shows, more than half (51.4%) respondent's condition of the seat of the vehicle was average and 39.1% seat was good while 9.5% was not good. Distance between seat and steering was closely among 67.7% respondents. Sitting posture was straight in 60.9% respondents while 39.1% was bending in posture. Among the respondents more than sixty percent (62.7%) were suffering from low back pain whereas 37.3% didn't have low back pain (Table V). More than sixty percent (64.75%) of the respondent's complaints that low back pain occur after driving while one fourth (26.62%) told during driving and only 8.6% complaints low back pain occur all the time (Figure II). Low back pain was highest among the respondents who can sign only (68.8%) and lowest (50.0%) among the respondents who were secondary passed while primary and below secondary had almost similar proportion of respondent. Education was not significantly associated ( $p = 0.52$ ) with low back pain (Table VI). Low back pain was highest among 10001 to 15000 income group (70.5%) and lowest among income group above 15000 (44.4%). Income was not significantly associated ( $p = 0.058$ ) with low back pain (Table VII). Very few respondents were absent from work for 1 day (2.3%) and more than 2 days (3.2%) respectively whereas majority (94.5%) never absent. More than two-third (78.2%) of the respondent take rest while remaining respondents (21.8%) didn't take rest (Table VIII). Among the respondent's majority (69.09%) used soft bed to sleep while 30.45% used hard bed to sleep (Fig III).

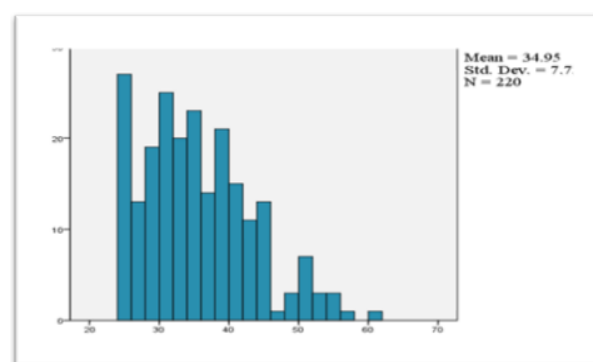


Fig-I: Histogram showing distribution of the population by age (n=220)

Table-I: Distribution of the respondents by age group (n=220)

Age	N	%
30 years and below	77	35.0
31-40 years	100	45.5
Above 40 years	43	19.5
Total	220	100.0

**Table-II: Distribution of Socio-demographic characteristics of the respondents (n=220)**

Characteristics	Number	Percentage
Education		
Illiterate	19	8.6
Can sign only	93	42.3
Primary	46	20.9
Below secondary	44	20.0
Secondary	18	8.2
Economic status		
10000 and below	106	48.2
10001 - 15000	105	47.7
15000 and above	9	4.1
Marital status		
Married	203	92.3
Unmarried	17	7.7
Religion		
Muslim	216	98.2
Hindu	4	1.8

**Table -III: Occupational characteristics of the respondents (n=220)**

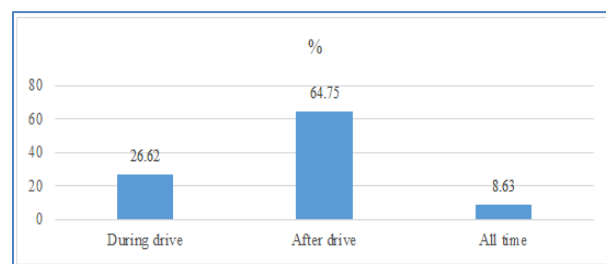
Characteristics	N	%
Seat condition		
Comfortable	177	80.5
Not comfortable	43	19.5
Job satisfaction		
Yes	177	80.5
No	43	19.5
Job dissatisfaction		
Low income	6	14.0
Hard work	2	4.7
Risky job	13	30.2
Others (No respect in society)	15	34.9
More than one reason	7	16.3
Total	43	100

**Table-IV: Occupation related factors (n=220)**

Characteristics	Number	Percentage
Condition of seat		
Good	86	39.1
Average	113	51.4
Not good	21	9.5
Distance between seat and steering		
Closely	149	67.7
Not closely	71	32.3
Sitting posture		
Straight	134	60.9
Bending	86	39.1
Total	220	100.0

**Table-V: Proportion of low back pain of the respondents (n=220)**

Low back pain	N	%
Present	138	62.7
Absent	82	37.3
Total	220	100.0



**Fig-II: Occurrence of Low Back Pain (n=220)**

**Table-VI: Relationship between education and low back pain (n=220)**

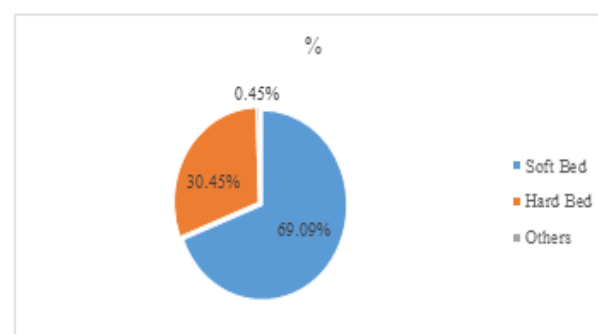
Education	Low back pain		$\chi^2$	p
	Present	Absent		
Illiterate	11 (57.9%)	8 (42.1%)	3.22	0.52
Can sign only	64 (68.8%)	33 (31.2%)		
Primary	28 (60.9%)	18 (39.1%)		
Below secondary	26 (59.1%)	18 (40.9%)		
Secondary	9 (50.0%)	9 (50.0%)		
Total	138	82		

**Table-VII: Relationship between low back pain and income (n=220).**

Income	Low back pain		$\chi^2$	p
	Present	Absent		
10000 and below	60 (56.6%)	46 (43.4%)	5.68	0.058
10001 - 15000	74 (70.5%)	31 (29.5%)		
Above 15000	4 (44.4%)	5 (55.6%)		
Total	138	82		

**Table-VIII: Working history of the respondents (n=220)**

Characteristics	Number	Percentage
Absent from work		
No absent	208	94.5
1 days absent	5	2.3
Absent more than 2 days	7	3.2
Rest		
Yes	172	78.2
No	48	21.8
Total	220	100.0



**Fig-III: Types of bed used to sleep by the respondents (n=220)**

## DISCUSSION

This study was carried out to find out low back pain and disability among the auto rickshaw drivers in Dhaka city. Two hundred and twenty populations were



selected for the study from four C.N.G stands and two garages. The study was a descriptive cross-sectional study. The total number of the respondents was 220 who were selected purposively from Mirpur-11 stand, Banani-11 stand, Tongi station road, Mirpur-10 stand, Ibrahimpur garage and Khilgaon garage. Data were collected by direct interview with a questionnaire and a checklist. The questions were regarding personal particulars, working condition, duration and experience, complaints of low back pain and its related disability, occupation related factors. Ergonomic factors related information was collected by observational checklist. Results of the present study provide support for our research objectives that was to determine the proportion of auto rickshaw drivers having low back pain, to measure pain disability among the respondents by Oswestry Low Back Pain Disability Questionnaire Scale, to determine the socio-demography of the respondents, to determine occupation related factors among the respondents and finally to find out the percentage of disability among the respondents those who have low back pain. Respectively while only 4.1% respondents earn above 15000 taka only. Majority of the respondents were married (92.3%) and Muslim (98.2%). In this study education and income was not significantly associated with low back pain. A study on Andrusaitis SF *et al.* [13] shown that there was no significant association of low back pain with socio-demographic characteristics in truck drivers of Sao Paulo, Brazil. But in case of Malaysian vehicle drivers a significant association was found between low back pain and marital status [14]. In this study it was found that proportion of low back pain increased with the increase of working time. Low back pain was highest among respondents who were working above 12 hours (85.7%) and lowest among respondents who were working 8 hours (52.2%) in a day. Working time was significantly associated ( $p = 0.019$ ) with low back pain. This was in accordance with the study by Shaik R *et al.* [10] work experience and working hours ( $p=0.006$ ) showed a significant positive association with low back pain. In the study Nahar *et al.* [15] found that more than 7 hour/day (8-16 hour/day) increase the risk of occurrence LBP by about 4 times than those who drive 1-7 hour/day among the car drivers in Dhaka city. Study shows that low back pain was higher among respondents who were working 7 days (70.5%) than respondents who were working 5 days (54.6%) in a week. Working days. Study shows that proportion of auto rickshaw drivers having low back pain was 62.7%. A study on prevalence of low backache in different occupational group of peoples (rickshaw pullers, housewives, porters, office workers, cultivators) in our country show prevalence of low back pain was 37.40% [16]. Another study on Nahar *et al.* [15] reported 78% of car drivers having complaint of LBP for at least one day during the past 12 months. The study was performed during December 2010 in Dhaka city. A study directly related to auto rickshaw drivers in Guntur city (urban city of India) it was found that 63.66%

drivers suffer from low back pain among 300 drivers [10]. In this study most of the respondents were can sign only (42.3%) and primary passed (20.9%) whereas some respondents (8.2%) crossed the secondary level. Most of the respondent's income were below 10000 and 10001 to 15000 taka (48.2%) and (47.7%) was significantly associated ( $p = 0.015$ ) with low back pain. Pietri *et al.* [17] reported that drivers have OR of 2.0 for LBP when driving more than 20 hours a week. Porter & Gyi[18] also found that driving more than 20 hours a week for work was associated with a high frequency of low back problems and related sickness absence [7]. There were clear illustrations by literature in regard to the greater risk of incidence of low back pain at an earlier age in subjects exposed to vibrations but in this study that was not measure. Auto rickshaws are one of the major means of public transport in Dhaka city. Most of the auto rickshaw drivers were accustomed to accommodating passengers in front cabin due to poor traffic surveillance in the city. Construction of the auto rickshaws with a relatively smaller driver's cabin and accommodation of passengers in driver's cabin result in postural stress to maintain balance and stability. There was extensive literature quoting the fact motor vehicle drivers vulnerable to work related musculoskeletal disorders due to various factors. Professional drivers had a higher prevalence of occupational disorders than other groups. In the study, found most of the similarity with some contradictory findings according to literature.

### LIMITATIONS OF THE STUDY

It was a descriptive type of cross-sectional study with small sample size, which doesn't reflect the scenario of the whole country.

### CONCLUSION AND RECOMMENDATIONS

Low back pain is a common and major problem in all over the world. Low back pain related disability cause substantial economic losses to individual as well as to the community. The drivers especially auto rickshaw drivers suffered from many musculoskeletal symptoms including low back pain and its related disability due to long duration of driving. In addition, Bangladesh is a developing country and facing a lot of challenges including health issues.

- Nutritious and balanced diet concept should be implemented among the drivers for maintaining good health.
- Need to provide guidance regarding the appropriate exercise for the problem of higher and lower BMI.
- Entrepreneurs of the vehicle sectors should be providing comfortable sit for the drivers.
- Treatment for coexisting diseases other than low back pain.
- Psychological counseling and guidance for a better lifestyle.

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