



# Prevalence Of Musculoskeletal Disorder Among Local Bus Drivers In Pune City

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**Abstract** – Introduction: A disorder could be defined as a set of problems, which result in causing significant difficulty in persons daily life. Work-related musculoskeletal disorders (WRMSDs) is defined as poor optimization and functioning of multiple joints, muscles, tendons, nerves and bones due to the work environment

Aim & Objective: To study the prevalence of work-related musculoskeletal disorder using Nordic musculoskeletal questionnaire.

Methods: We conducted prevalence study among 100 bus drivers from Pune. We collected data from the different bus depo in pune city as per inclusion criteria. We used Microsoft excel for data entry.

Results: Total prevalence of musculoskeletal disorder among local bus drivers in Pune city was found 61%.

Conclusion: The study also concludes that low back pain is the most prevalent form of musculoskeletal disorders in local bus drivers of Pune city followed by knee pain, neck pain.

**Keywords** – Musculoskeletal disorder, prevalence, bus drivers.

## I. INTRODUCTION

- Disorder - An illness that disrupts normal physical or mental functions.
- A disorder could be defined as a set of problems, which result in causing significant difficulty, distress, impairment and or suffering in persons daily life.
- Work-related musculoskeletal disorders (WRMSDs) is defined as poor optimization and functioning of multiple joints, muscles, tendons, nerves and bones due to the work environment.
- Discomfort - Mental or physical uneasiness
- WRMSDs are induced by postural defects, repetitive tasks, environmental factors, and prolonged stresses and strains experienced in long-distance driving.
- One of the consequences of these disorders is an increase in absenteeism, which places an economic strain on the employer and the employee.
- WRMSDs have become multifaceted and a global phenomenon, accounting for 42-48% of work-related musculoskeletal illnesses.

## ➤ RISK FACTORS

- Repetitive motions
- Forceful exertions - pulling, pushing, lifting and gripping
- Awkward postures – body positions that are not in the resting positions
- Static postures – body positions held without moving
- Mechanical compression of soft tissues
- Fast movement of body parts
- Vibration
- Mental stress
- Lack of sufficient recovery time

## II. NEED OF STUDY

- Pune is the second largest city in Maharashtra with population of around 78,49,968 (2011) and the area of 8,616 km2.
- Pune transport system can be broadly divided into public and private.
- Majority population of pune such as students, working professionals commute through public transport.
- Pune public transport: pune mahanagar parivahan mahamandal ltd (PMPML) offers bus services to the citizens of pune.
- The buses run in the pune city, pimpri, chinchwad and other adjoining areas of pune. PMPML falls under the control of pune municipal corporation (PMC).
- Musculoskeletal disorders are widespread in many countries around the world.
- Transport workers have been found to be at high risk of developing work-related musculoskeletal disorders (WRMSDs).
- Bus drivers experience stress throughout the day. The physical and psychological health of the bus driver is a critical factor in the driving performance.
- High prevalence rates of musculoskeletal disorders have been found in urban bus drivers.
- Previous studies have showed that low back pain is most common ailment encountered by the drivers of different vehicles.

## III. AIM

“To check the prevalence of musculoskeletal disorder among local bus drivers in Pune city”

#### IV. OBJECTIVES

- To study the prevalence of work-related musculoskeletal disorder using Nordic musculoskeletal questionnaire
- To study the prevalence of work-related musculoskeletal disorder in different body parts using Nordic musculoskeletal questionnaire

#### V. REVIEW OF LITERATURE

1. A study was conducted by lalit, retasha soni and sudhir garg in the year 2015 under the title “the prevalence of musculoskeletal disorders among bus drivers in tricity.” Which was published in international journal of physiotherapy

Results: out of total sample of 300 male bus drivers 159 reported that they had WRMSDs. The prevalence was 53%.

Conclusions: the prevalence of work-related musculoskeletal disorders among bus drivers in tricity (chandigarh, panchkula, and mohali) is found to be as high as 53%. It is also concluded that the low back (30.3), and neck (17.3) are the most common sites susceptible to injury followed by knees (14.7), shoulder (6.3), and ankle/feet (5.7%).

2. Another study under the title “the prevalence of work-related musculoskeletal disorders in long distance bus drivers” was performed by N rugbeer, N neveling and T sandia from department of sport, rehabilitation and dental science, tshwane university of technology, pretoria, south africa.

Results: 67% of 89 participants indicated they do experience WRMSDs as a result of driving.

Conclusion: the greatest proportion of pain was experienced along the axial skeleton in long-distance bus drivers. Upper back pain was the most prevalent of the wrmsds reported in these drivers.

#### VI. METHODOLOGY

- Study design - cross-sectional study
- Sample size - 100
- Sample method - convenient sampling
- Study population - male bus drivers
- Study setting – bus depo in and around Pune
- Study duration - 6 months

## VII. MATERIALS

- Pen
- Paper
- Data collection sheet
- Consent form
- Scale - Nordic musculoskeletal questionnaire (reliability value 0.965 -0.966)

## VIII. STUDY CRITERIA

### ➤ Inclusion Criteria

1. Male bus drivers of PMC
2. Participants who are willing to participate
3. Age group of 30 to 45
4. Driving for at least 8 to 9 hours per day
5. Days of working more than 5 times a week
6. Work experience of at least 5 years

### ➤ Exclusion Criteria

1. Participants with recent upper or lower extremity injury and fracture
2. Any diagnosed neurological condition
3. Any congenital deformity
4. Diagnosed spinal abnormalities
5. Visual and auditory impairments
6. Driving for more than 3hrs a day on any other vehicle than bus
7. Known case of any pathology of upper and lower extremity
8. Bus drivers driving for less than 6hrs per day
9. Participants with diagnosed case of calcium deficiency or bone related disease

## IX. PROCEDURE

- The study began with a synopsis presentation in front of the ethical committee in P.E.S. Modern college of physiotherapy.
- Ethical committee clearance had been obtained before beginning the work on the research project.
- Participants were selected according to inclusion and exclusion criteria.
- The study was explained to the participants and consent was taken from them.
- The standardized Nordic musculoskeletal Questionnaire explained to them and the questionnaire was filled by interview method.

## X. OUTCOME MEASURES

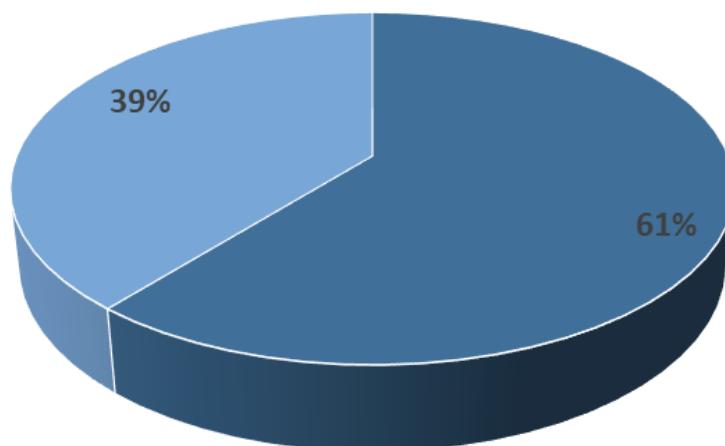
- **Nordic musculoskeletal questionnaire**

**(Reliability value seen from the Cronbach's Alpha value is in the range of 0.965-0.966).**

## XI. DATA ANALYSIS

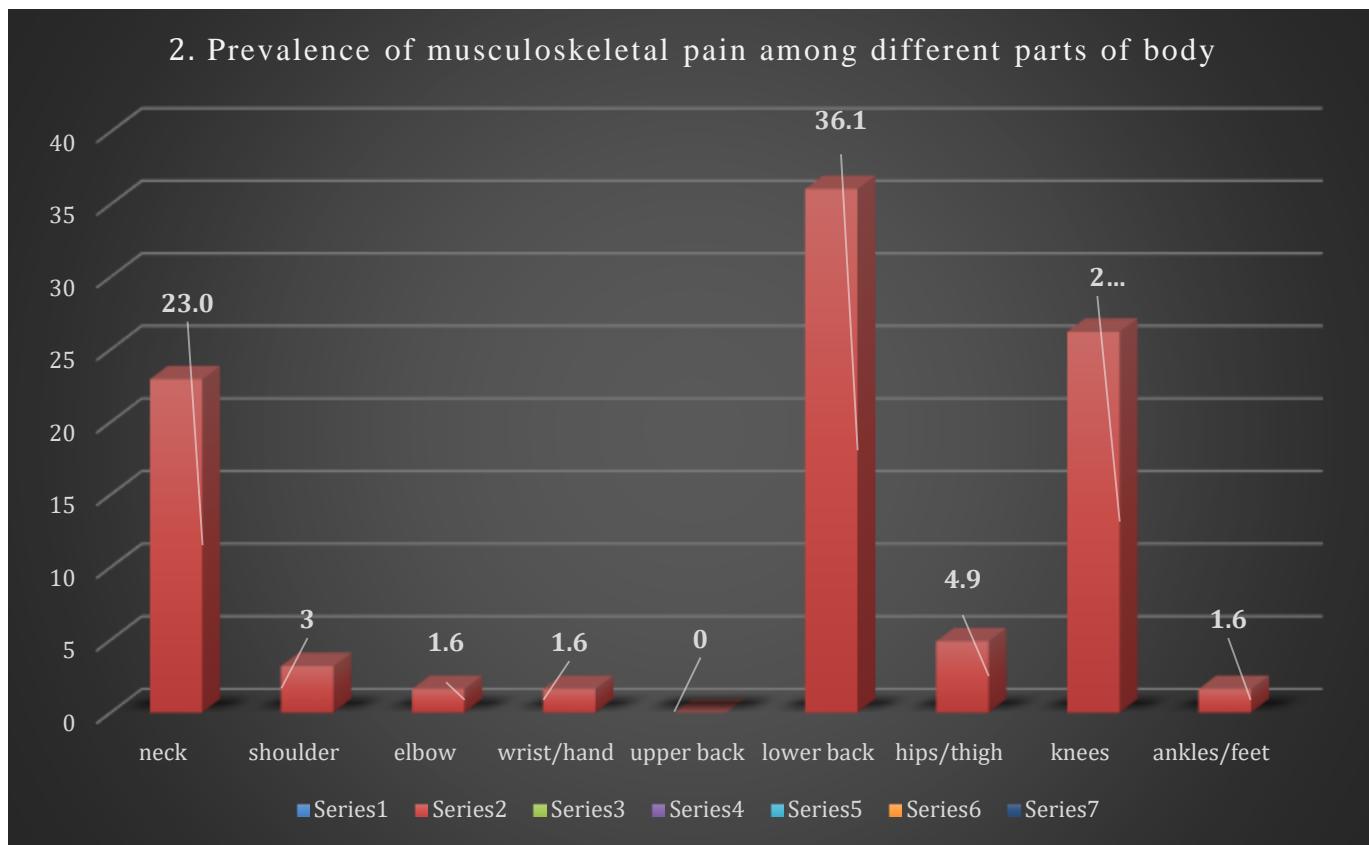
- Data analysis is done for 100 participants in MS- EXCEL.

1. Title: Prevalence of musculoskeletal pain among local bus drivers in Pune city



## XII. RESULTS

Total prevalence of musculoskeletal disorder among local bus drivers in Pune city was found 61%.



Prevalence of low back pain was highest i.e. 36.1% followed by knee 26.2%, neck 23%, hip 4.9%, shoulder 3%, elbow 1.6%, wrist 1.6%, ankles 1.6% and upper back 0%.

## XIII. DISCUSSION

- The aim of the study was to evaluate the presence of musculoskeletal disorders in local bus drivers in Pune city
- Musculoskeletal disorders (MSDs) are injuries that develop in the soft tissue body such as nerves, muscles, tendons and joint due to repeated or prolonged exposure.
- Results of the study showed that there is high prevalence of musculoskeletal pain among local bus drivers.
- In the present study total 100 participants were selected out of that the prevalence of musculoskeletal disorder is prevalently seen 61% with the mean age of 37 years.
- When Nordic questionnaire was used to see the prevalence of musculoskeletal pain in different parts of the body, low back pain was found to be more affected i.e. 36% followed by knee (26.25) and neck (22.9%) respectively.
- There is an association between the working posture and the development of musculoskeletal disorders in bus drivers those are exposed to different awkward postures while working.
- Holding extreme postures places very high loads on the body, resulting in rapid fatigue. The static postures add to the muscular effort required to do the task. The constricted blood flow reduces the supply of nutrients to the muscles and the removal of acids and other waste products away from the tissues. Reduced blood flow

also slows down delivery of oxygen to the muscles. The longer or more frequently static loading occurs, the greater the risk of injury due to overuse of muscles, joints and other tissues.

- Excessive use of brakes and clutch while driving puts pressure on knee joint causing reduced joint space.
- Bus drivers are exposed to risk factors at the workplace such as working in wrong body postures, bending, inappropriate workplace environment. These activities, if conducted in incorrect manner, affect the muscular system causing musculoskeletal disorders. These can however, be prevented by applying ergonomics in the workplace.
- A study was conducted Lalit and Retasha Soni in the year 2015 under the title “the prevalence of musculoskeletal disorders among bus drivers in tricity.” Results of this study showed that out of 300 male bus drivers 159 reported that they had WRMSDs. The prevalence was 53%.

#### **XIV. CONCLUSION**

- The study concludes that the prevalence of the musculoskeletal disorders in local bus drivers in Pune is i.e. 61%.
- The study also concludes that low back pain is the most prevalent form of musculoskeletal disorders in local bus drivers of Pune city followed by knee pain, neck pain.

#### **XVI. LIMITATIONS**

- The present study did not consider the type of bus (i.e. old manual transmission, new electric buses).
- Participants with degenerative changes like Osteoarthritis etc were not diagnosed for the study.

#### **XVII. FUTURE SCOPE**

Further risk factor analysis with respect to age, BMI, working hours, work experience could be included in the future research.

#### **XVIII. REFERENCE**

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