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Incidence of Low Back Pain in bus conductors of Mumbai Suburban District

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Abstract
Low back pain (LBP) is one of the most common occupational health issues affecting workers engaged in prolonged standing, awkward postures, and repetitive physical activities. This study aimed to assess the incidence of low back pain among bus conductors working in the suburban districts of Mumbai. A cross-sectional survey was conducted among a representative sample of bus conductors to evaluate the prevalence of LBP using the Oswestry Low Back Disability Questionnaire and identify associated risk factors such as duration of employment, working hours, posture, and ergonomic conditions. The findings revealed a high incidence of low back pain and presence of disability among the conductors significantly correlated with longer working years and inadequate rest periods. The study highlights the need for ergonomic interventions, regular health assessments and awareness programs to reduce the burden of low back pain among this occupational group.

Keywords: Low Back Pain, Bus conductors, Oswestry Low Back Disability Questionnaire

Introduction

Transport or transportation is the movement of people or goods from one place to another. The term is derived from the Latin words trans (across) and portare (to carry). In India multiple forms of public conveyance are available for passengers, among them buses play a significant role [3] In Mumbai, many forms of public transportation are available for passengers. Among them buses play a significant role. The safety of the general public both within the bus and on the road is given little little priority.[5] Work-related musculoskeletal disorders (WMSDs) affect workers in many occupations including those related to operating large vehicles. Urban bus workers have been found to have high prevalence rates of musculoskeletal problems.[5] Bus conductors are at an increased risk of developing musculoskeletal symptoms because they are exposed to various physical and psychological factors. Among these, low back pain (LBP) is most extensively reported [2]Work related low back pain is present everywhere. It results in severe long term pain and physical disability and affects millions of people all over the world.[4] There are many physical factors that may contribute to increased physical loading in the bus conductor's musculoskeletal system, resulting in discomfort and pain. Bus conductors are at an increased risk of developing musculoskeletal symptoms because their jobs involve prolonged standing, whole-body vibration, strenuous workload and prolonged working time. This can lead to poor ergonomics.[2] In Mumbai, the working conditions of bus conductors are poor and stressful. However, this problem has not been investigated. The purpose of this study is to investigate the incidence of Low Back Pain and the extent of stress among bus conductors in Mumbai Suburban District.

Need of Study

Literature states that bus conductors are prone to develop low back pain and musculoskeletal injuries due to prolonged standing, strenuous workload and the nature of their job. There is limited study conducted on the incidence on level of disability among bus conductors of Mumbai Suburban District. Thus it is important to find out the incidence of low back pain and its probable disability among bus conductors through proper survey to prevent the further progression of the injuries

Aim

To study the incidence of low back pain and disability in bus conductors of BEST of Mumbai Suburban Area

Objective

- To screen the population for incidence of low back pain in bus conductors of BEST of Mumbai Suburban Area.
- To screen the secondary population for incidence of low back pain with Oswestry Low Back Disability Questionnaire.

Materials and Methods

A cross-sectional study was conducted among 100 bus conductors from Mumbai's suburban district to assess the incidence of low back pain. Participants were first screened for low back pain. Those who reported experiencing low back pain were selected as the secondary study population and were administered the Oswestry Disability Index (ODI) questionnaire to evaluate the level of disability.

Inclusion criteria

Minimum 1 year working experience as a bus conductor
Bus conductors between 18 to 50 years of age.
Bus conductors of non-AC buses.
Male conductors

Exclusion criteria

Any participants with trauma, congenital deformity
Any participants with neurological conditions, limb injuries
Non – consent to participation.
Incomplete responses.

Procedure

Approval was taken from the Institutional Ethics Committee of TMV'S Lokmanya Tilak College of Physiotherapy, Kharghar.

The purpose and the procedure of the study was clearly explained to the participants and the informed consent was taken with consideration of inclusion and exclusion criteria.

Demographic data and general characteristics of the participants working as bus conductors was obtained and later the Oswestry Low Back Disability Questionnaire was administered to the participants The questionnaires collected were screened to exclude any incomplete questionnaire or participants who did not meet the inclusion criteria

The data is descriptively analyzed using Microsoft Excel.

Data Analysis and Results

Descriptive Analysis

The descriptive analysis was performed using Microsoft Excel.

Descriptive Statistical analysis was done of the data collected using MS Excel. The data collected was statistically analysed and is presented in the form of pie charts and bar graphs. A total of 100 responses were collected from the bus conductor' s. Out of which 49 candidates responded (No) for low back pain and 51 candidates responded (Yes) for low back pain.

Chart: 1

Represents the distribution of disability levels among the participants. According to the pie chart 69% of individuals fall within the Mild Disability category. And 31% of participants fall under No Disability category.

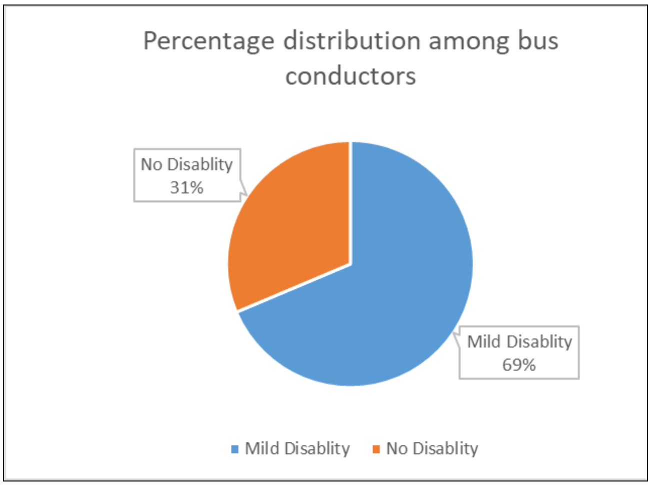

Chart: 2

The bar graph illustrates the age distribution of candidates across four age groups: 33–37, 38–42, 43–47, and 48–52.it is seen from the graph that the number of candidates increases with age, starting from 7 candidates in the 33–37 group to a peak of 17 in the 48–52 group.

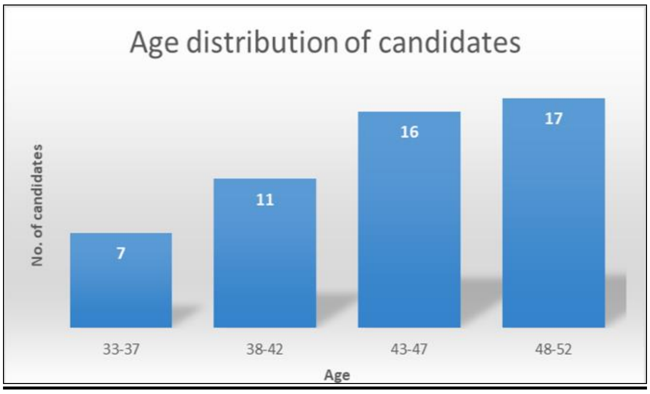

Chart: 3

The provided chart illustrates the distribution of comorbidities among candidates presenting with low back pain. The x-axis represents the different categories of comorbid conditions while the y-axis denotes the number of candidates within each category. The chart describes that the largest portion of candidates, totalling 40 individuals exhibited no comorbidities. A smaller group of 10 candidates had diabetes as a comorbid condition. Only 1 candidate presented with both diabetes and high blood pressure (BP)

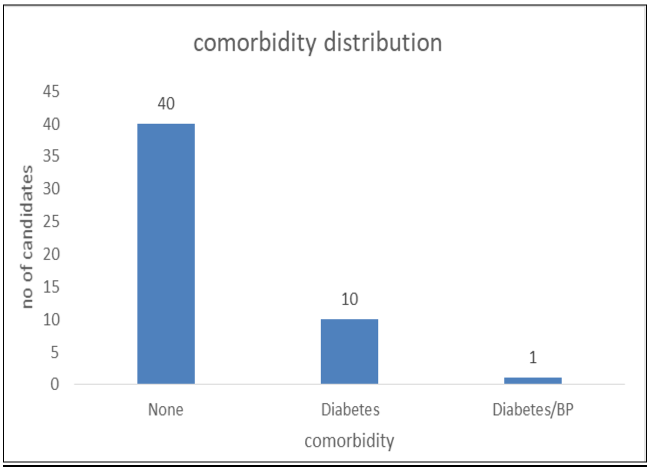

Chart: 4

This bar graph demonstrates the number of candidates distributed across 2 different Oswestry

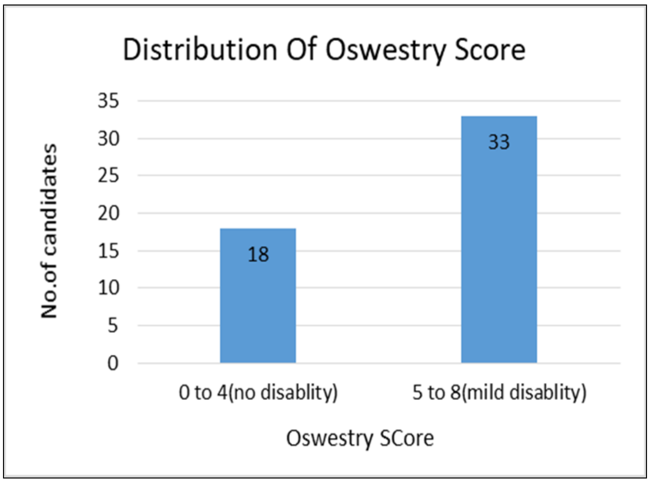

Table 1: Summary Statistics for Age Distribution

Metric	Value
Mean	43.94
Median	44.5
Mode	50
Standard Deviation	5.37
Standard Error	0.76

Table 2: Summary Statistics for Years of Service

Metric	Value
Mean	17.72
Median	17
Standard Error	0.739575168
Mode	15
Standard Deviation	5.229586162

Table 3: Summary Statistics for Duration of Low back pain

Metric	Value
Mean	29.44
Standard Error	3.719135296
Median	24
Standard Deviation	26.29825788

Table 4: Summary Statistics for Oswestry Score

Metric	Value
Mean	4.76
Standard Error	0.241694697
Median	5
Mode	5
Standard Deviation	1.709039592

Discussion

The goal of this study was to determine the incidence of Low back pain and Disability in the bus conductors using Oswestry Low Back Disability Questionnaire and determine the degree of disability among the bus conductors.The study investigated the incidence and severity of low back pain (LBP) among 100 bus conductors in the Mumbai suburban district. According to the result of the study, out of 100 participants, 51 reported LBP, yielding an incidence rate of 51%, indicating that more than half of the conductors experience musculoskeletal discomfort, highlighting LBP as a significant occupational health concern. Among the 51 affected individuals, 31% were classified as having no disability, whereas 69% were found to have a mild disability. These findings provide valuable insights into the burden of LBP among transport workers, not only in terms of incidence but also in terms of disability and its effect on daily functioning.

The 51% incidence rate of LBP highlights that more than half of bus conductors experience some form of back pain. However, the Oswestry scores suggest that the majority of these cases are of mild severity, with mild activity limitations. This could indicate that while LBP is widespread, it is not yet disabling for most conductors. It is possible that pain is recurrent but managed through adaptation strategies, over-the-counter medications etc.Analysis of demographic and occupational variables revealed that the mean age of conductors with LBP was 43.94 years (SD ± 5.36), this indicates that middle-aged workers were predominantly affected, with a small variation suggesting that most cases clustered around the early-to-mid 40s and a few older conductors were also affected.

The mean duration of service among affected conductors was 17.72 years (SD ± 5.22), this suggests that extended time in service is associated with an increased risk of developing LBP.The SD indicates moderate variability, reflecting that both relatively newer and more experienced conductors were affected.

At the same time, the presence of 69% mild disability is significant, as even mild levels of impairment can affect occupational performance, especially in a profession requiring prolonged standing, repetitive movements, and interaction with passengers in moving buses. Over time, untreated mild disability may progress to moderate or severe forms, increasing the risk of absenteeism, chronic disability, and decreased quality of life.

Roy S. *et al* (2021) in the topic Frequency of Low Back Pain and Other Associated Musculoskeletal Disorders In City Bus Conductors of Guwahati city stated that because of constant standing posture for hour's abnormal posture and also the jerking of the bus increased the pressure on the spine which make the lower back muscles go into spasm, leading to pain and disability. It is found that the bus conductors work continuously for long periods and their severe workload may result in the development of minimal disability in lower back. [2]

Deshmukh PK *et al* (2021) in the topic Prevalence of musculoskeletal disorders among bus conductors in Nagpur city stated that the constant alternating motion of the conductors between the front and rear doors of bus for collecting the fares, issuing tickets and monitoring the passengers of bus. The distance covered by the bus conductors is very long, and it is multiplied many times during the several trips that they make each day and they get exposed to constant mechanical vibrational forces. The problem of mechanical vibration has often been reported as a major factor affecting professional transportation workers. [3]

Several occupational and ergonomic factors explain the high proportion of mild disability: Prolonged standing and movement within moving buses, leading to repetitive trunk twisting and balance adjustments. Whole-body vibration exposure due to poor road conditions and continuous travel. Heavy or poorly designed ticketing machines that increase biomechanical strain. Irregular shifts and insufficient rest periods, which may prevent adequate recovery. Psychosocial stress, including passenger pressure, job insecurity, and fatigue, which are known to exacerbate musculoskeletal pain.

Twisting or torque, posture in standing, and muscle forces and stiffness generated to maintain posture, affect the ligaments, tendons and muscles of the back, and in addition, may alter the spinal load and risk of incurring an injury which may result in low back pain [3]

Verma G *et al* 2022 in the topic Work related musculoskeletal disorders among bus conductors of Udupi District, Karnataka stated that the commonly affected regions are the knee joints and lower back. These being the most weight-bearing joints are more liable to the insults of awkward posture, heavy lifting, and whole-body vibration. [1]

However, the advantage of the present study is that it gives a clue on the incidence of low back pain and disability in bus conductors within the population surveyed in a brief and concise manner.

Conclusion

This study highlights a high incidence of low back pain and disability (51%) among the bus conductors of Mumbai Suburban District who participated in the study, with (69%) of the candidates falling in the Mild Disability category and (31%) of the candidates falling in No Disability category as per the Oswestry Scale.

Conflict of Interest

None

Sources of Funding

None

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References

1. Verma G, Tiwari RR. Work related musculoskeletal disorders among bus conductors of Udupi District, Karnataka. Indian Journal of Occupational and Environmental Medicine,2022:1:26(3):193-7.
2. Roy S, Bhattacharya U, Boruah K, Bhattacharya U. Frequency of Low Back Pain and Other Associated Musculosk-eletal Disorders In City Bus Conductors of Guwahati city, Assam, India. Int J Physiotherapy Res,2021:9(4):3876-82.
3. Deshmukh PK, Shende AR, Akhtar PM. Prevalence of musculoskeletal disorders among bus conductors in Nagpur city: an observational study. IP J Nutr Metab Health Sci,2021:4:55-60.
4. Mehta AG, Patil DS, Patil DC, Chotai DK. Prevalence Of Work Related Musculoskeletal And Psychological Problems Among Female Bus Conductors In Karad. Int. J. Life Sci. Pharma Res,2020:10(4):L21-28.
5. Gangopadhyay S, Dev S, Das T, Ghoshal G, Ara T. An ergonomics study on the prevalence of musculoskeletal disorders among Indian bus conductors. International journal of occupational safety and ergonomics,2012:18(4):521-30
6. Koivunen K, Widbom-Kolhanen S, Pernaa K, Arokoski J, Saltychev M. Reliability and validity of Oswestry Disability Index among patients undergoing lumbar spinal surgery. BMC surgery,2024:24(1):13.
7. Joshi VD, Raiturker PP, Kulkarni AA. Validity and reliability of English and Marathi Oswestry Disability Index (version 2.1 a) in Indian population. Spine,2013:38(11):E662-8.
8. Krause N, Rugulies R, Ragland DR, Syme SL. Physical workload, ergonomic problems, and incidence of low back injury: A 7.5-year prospective study of San Francisco transit operators. American journal of industrial medicine,2004:46(6):570-85.
9. Daley C, Marchetti G, Brown ED, Foundas B. Musculoskeletal Pain/Discomfort in Collegiate Conductors. InCollege Music Symposium,2025:65(1):3 5-49 College Music Society.
10. Ekechukwu EN, Useh E, Nna OL, Ekechukwu NI, Obi ON, Aguwa EN, Arinze-Onyia SU, Abaraogu UO, Utti VA. Ergonomic assessment of work-related musculoskeletal disorder and its determinants among commercial mini bus drivers and driver assistants (mini bus conductors) in Nigeria. PLoS One,2021:7:16(12):e0260211.
11. Okunribido OO, Shimbles SJ, Magnusson M, Pope M. City bus driving and low back pain: a study of the exposures to posture demands, manual materials handling and whole-body vibration. Applied ergonomics,2007:1:38(1):29-38