

Study of Prevalence of Elbow Pain in Drivers Visiting OPD at Kamla Nehru Hospital

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Conflict of interest: Nil

Abstract

Introduction: Musculoskeletal disorders of the upper limb are an important occupational health issue among professional drivers repetitive steering, vibration exposure, and poor posture may predispose them to chronic elbow pain.

Aim: To assess the prevalence, severity and associated risk factors of elbow pain among drivers attending the OPD at Kamla Nehru Hospital, Pune.

Materials and Methods: This cross-sectional study was conducted among 45 drivers attending the OPD at Kamla Nehru Hospital over three months. Data regarding demographic details, years of driving, hours spent driving per week, type of vehicle, handedness, and pain characteristics were collected using a structured questionnaire. Clinical examination and Patient-Related Elbow Evaluation (PREE) and Single assessment numerical evolution (SANE) scores were recorded. Data were analysed using descriptive statistics, correlation, and logistic regression. Ethical approval was obtained from the Institutional Ethics Committee on 16/04/2025.

Results: The mean age of participants was 46.9 +/- 13.7 years, with 86.7% males and 91% driving manual vehicles the main pain severity was 5.1 +/- 3.1 PREE total 55.18 +/- 27.49 and SANE 39.8 +/- 25.89 indicating the moderate functional disability. Weak correlations were noted between the pain severity and both years of driving ($r = 0.007$) and weekly driving hours ($r = -0.214$). Logistic regression did not show statistically significant predictors of the severe pain, though trends indicated higher exposure increases risk. Prevalence = $45/458 \times 100 = 9.82\%$.

Conclusion: Elbow pain is a prevalent occupational health problem among drivers with moderate disability levels. The study highlights repetitive use, prolonged driving hours and manual vehicle operation as key risk contributors. Ergonomic education, postal correction and regular exercise are essential preventive measures.

Keywords: Elbow Pain, Drivers, Musculoskeletal Disorder, And Occupational Health Ergonomic Cross-Sectional Study.

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Introduction

Professional driver experience repeated to upper limb movement, vibration and sustained static postures that predispose them to muscular skeletal problems, particularly elbow pain. Prolong gripping steering and gear shifting can cause overuse injury such as tendinopathy and nerve entrapment syndromes.

Elbow pain adversely affects in driving performance, occupational safety, and quality of life. While research exists globally Indian data remains limited, particularly among OPD based drivers population. This study was conducted to determine the prevalence, severity, and correlation of the elbow pain among drivers attending OPD in the Kamla Nehru Hospital Pune.

Material and Methods

Study Design: Cross-sectional descriptive study.

Study Setting: Out Patient Department Kamla Nehru Hospital Pune.

Study Duration: 3 Months.

Sample Size: 45 Participants.

Calculation: using formula (fig:1 sample size formula)

$$\text{Unlimited population: } n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\epsilon^2}$$

$$\text{Finite population: } n' = \frac{n}{1 + \frac{z^2 \times \hat{p}(1-\hat{p})}{\epsilon^2 N}}$$

$$N = (1.96)^2 * 0.03(1-0.03)/(0.05)^2$$
$$= 44.716$$
$$= 45$$

Ethical clearance institutional ethics committee:

Approved obtained on 16/04/2025.

Inclusion Criteria:

- Drivers with elbow pain
- Activity- driving for more than equal 1 year
- Age- more than equal to 18 years
- Willing to provide informed consent

Exclusion Criteria:

- History of recent elbow trauma
- Inflammatory disorders
- History of elbow surgery
- Non drivers.

Data Collection: Data were obtained using a structured questionnaire covering sociodemographic details, vehicle type, and years of experience, hours driven per week and hand used for driving. Clinical examination included inspection, palpation, range of

motion and special tests (tennis elbow, golfer's elbow and tinel's sign) the patient related elbow evaluation PREE and single assessment numerical evolution SANE scores were used to assess pain and function.

Data analysis, descriptive statistics, correlational analysis, and logistic regression were performed using the appropriate statistical software. A p-value of less than 0.05 was considered significant.

Results

After obtaining approval from the IEC -

We started collecting the data of the drivers visiting OPD at Kamla Nehru Hospital Pune.

Total of 515 drivers were screened, Out of them 458 were eligible and gave consent, Out of them according to the calculation, and statistics the sample size patients were achieved. Henceforth the prevalence here comes to be:

$$\text{Prevalence} = 45/458 \times 100 = 9.82\%.$$

Photographs of the patient

Figure 1: Patient with elbow pain



Figure 2: Patient with elbow pain



Figure 3: Patient with elbow pain

Demographic characteristics of 45 drivers, 39 (86.7%) were male and 6 (13.3%) were female. The mean age was 46.98 $\pm$ 13.77 years, mean driving experience was 20.11 $\pm$ 8.82 years, and mean hours driven per week 31.38 $\pm$ 16.45

Variable mean (SD)/N(%)

- Age (years) 46.98(13.77)
- Males 39(86.7%)
- Females 6(13.3%)
- Years driving 20.11(8.82)
- Hours/week driving 31.38

- Manual vehicles 41(91.1%)
- Automatic vehicles 4(8.9%)
- Right-handed drivers 39(86.7%)
- Left-handed drivers 6(13.3%)

Pain and functional scores

- Parameters Mean (SD)
- PREE Pain 45.16(32.23)
- PREE Function 56.73(30.68)
- PREE Total 55.18(27.49)
- SANE Score (%) 39.18(25.89)

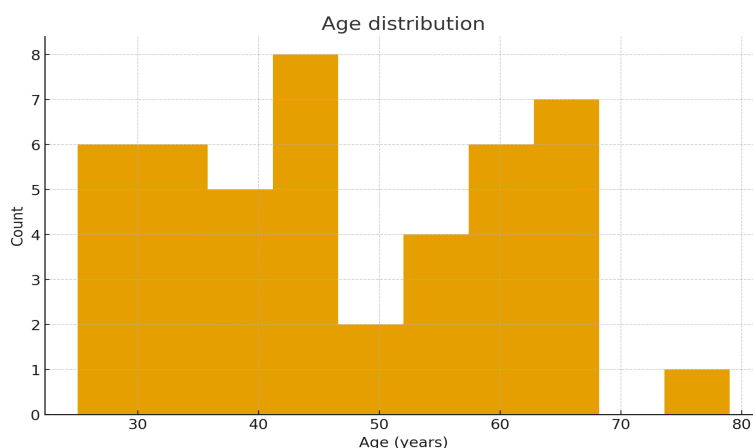


Figure 4: Age distribution of drivers

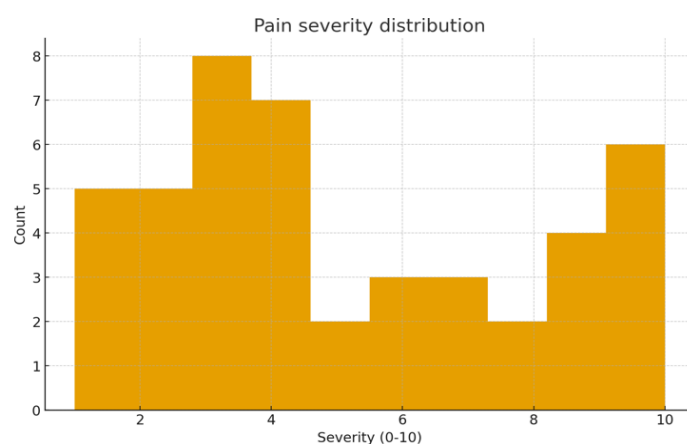
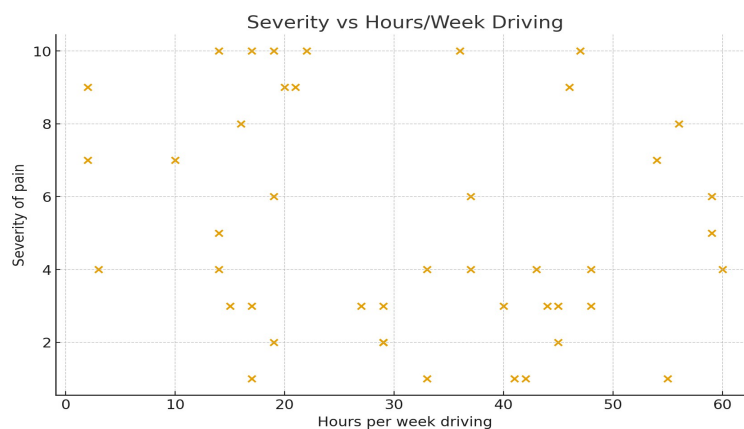


Figure 5: Pain severity distribution



Correlation and regression

- Severity vs Hours per week: $r=-0.214$
- Logistic regression: No statistically significant predictors ($P>0.05$)
- However, clinical trends indicated higher pain with increased driving exposure.

Discussion

This study identifies elbow pain as a common musculoskeletal complaint among Indian drivers, consistent with global findings. The mean pain severity (5.1/10) and PREE total score (55.18) suggest moderate functional disability.

Our findings align with Qaryat Sanad et al.(2021),who reported high rates of medial elbow pain among taxi drivers due to repetitive gripping and poor ergonomics,

And Asfar et al. (2014), who demonstrated ulnar nerve conduction abnormalities from prolonged elbow flexion and vibration exposure.

The predominance of manual vehicles use and right-handed drivers likely increase strain on the dominant limb. Latz et al.(2019) observed that manual gear operation require greater elbow motion range than automatic driving, supporting our findings.

Although correlation analyses were not statistically significant trends were clinically relevant. The small sample size and cross-sectional designed limit causality but highlight an important occupational burden.

Biomechanically, repetitive pronation-supination, sustained flexion, and vibration transfer through the steering wheel contribute to chronic tendinopathy and nerve entrapment (Piligian et al.,2000).

Preventive interventions should focus on ergonomic education, adjustable steering design, scheduled breaks, and strengthening exercises. Early recognition and rehabilitation can reduce chronic disability and improve occupational safety.

Conclusion

Drivers presenting to the OPD frequently report elbow pain associated with moderate functional disability. A significant association was observed with years and hours of driving, hand used for driving and type of vehicle (manual or automatic). Elbow pain in drivers attending the OPD at Kamla Nehru Hospital Pune is a prevalent issue, particularly among males using manual vehicles and predominantly driving with the right hand. The mean pain severity score of 5.1 mean PREE Total score of 55.18 and mean SANE Score of 39.18 reflect moderate functional impairment impacting occupational performance.

Repetitive use of the forearm, constant gripping of the steering wheel, and sustained elbow flexion

during prolonged driving contribute to cumulative microtrauma and degenerative changes around the elbow joint. This highlights the occupational nature of elbow disorders in professional drivers.

The findings of this study are consistent with international research, such as those conducted by Waseem et al.(2021) In Pakistan and Afsar et al.(2014) In Turkey, which also demonstrate that repetitive motion, poor ergonomics, and prolonged exposure to vibration are significant risk factors. However, the present study provides novel, region-specific evidence from the Indian context, where manual transmission vehicles are predominant, and ergonomic vehicle adaptations remain limited.

Clinically, this research emphasizes the importance of early recognition and management of work-related Elbow disorders. Preventive interventions should include ergonomic awareness, regular breaks during long drives, posture correction, and strengthening exercises for the upper limb musculature. Periodic screening of professional drivers for musculoskeletal strain and prompt referral for physiotherapy or occupational therapy may prevent chronic disability.

From a public health perspective, these findings highlight the need for integrated occupational health policies and ergonomic education targeting drivers. Policymakers and hospital based health professionals should collaborate to design preventive strategies, including ergonomic modification in vehicle designed and awareness programs about musculoskeletal health.

The analytical insights of this study including mean severity, PREE and SANE Score patterns, and the regression analysis reveals that even in the absence of statistically significant correlations clinically meaningful trends exists. Elbow pain has a tangible effect on productivity, comfort and quality of life among drivers.

Further research with larger, multi centric samples and longitudinal follow up is needed to explore causal relationships and validate this findings incorporating electromyographic, ergonomic and biomechanical analysis in further studies would help developed target interventions and rehabilitation protocols.

In summary this study establishes that elbow paint among drivers is an emerging occupational health issue requiring early preventive and ergonomic interventions. Collaborative efforts among clinician, physiotherapists, economic experts and policy maker are essential to safeguard driver health and occupational efficiency in the long term.

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References

1. Qaryat Sanad, Waseem A, Rana AA, Idrees MQ, Ahmed I, Dastgir H. Prevalence of Medial Elbow pain in Taxi Drivers of Lahore: A cross-sectional study. *Healer J Physiother Rehabil Sci*. 2021.
2. Latz D, Schiffner E, Schnependahl J, et al. Doctor, when can I drive? The range of elbow motion while driving a car. *J Shoulder Elbow Surg*. 2019;28(6):1139-1145.
3. Afsar SI, Ucan H, Caliskan H, Tascilar ME. Ulnar nerve conduction abnormalities in Turkish taxi drivers *Arch Rheumatol*. 2014; 29(2): 119-124.
4. Piligian G, Herbert R, Hearn M, Dropkin J, Landsbergis P, Cherniack M. Evaluation and management of chronic work-related musculoskeletal disorders of the distal upper extremity. *Am J Ind Med*. 2000;37(1):75-93.