

Lateral Epicondylitis among Police Personnel: A Descriptive Cross-sectional Study

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ABSTRACT

Introduction: Lateral epicondylitis is common in occupational groups who are involved in repetitive action of the forearm. Police personnel are involved in weapon handling, handcuff and baton use. The burden of this disease among police personnel has not been studied in our country. This study aimed to determine the prevalence of lateral epicondylitis among police personnel along with association of lateral epicondylitis with weapon handling and diabetes mellitus.

Methods: This cross-sectional descriptive study was conducted between 1 January 2025 to 31 March 2025 within the orthopedic and pain Outpatient Departments of a tertiary care centre. Ethical approval for the study was obtained from the Institutional Review Committee (Reference number: 28). The sample size for the study consisted of 198 individuals, and participants were chosen using convenience sampling. Data were analyzed using descriptive statistical methods SPSS version 21. Point estimate and 95% Confidence Interval were calculated.

Results: Among 198 individuals, the prevalence of lateral epicondylitis among police personnel was found to be 51 (25.76%) (19.67-31.85, 95% Confidence Interval). The mean age of the participants was 36.065±7.99. The mean body mass index among the individuals was 24.63±0.849 kg/m². Majority of the participants were males, 110 (55.56%).

Conclusions: The prevalence of lateral epicondylitis among police personnel was found to be higher than other studies.

Keywords: *diabetes mellitus; lateral epicondylitis; police personnel; weapon handling.*

INTRODUCTION

Lateral epicondylitis (LE) is a commonly occurring condition that impacts 1.6-23.1% of individuals engaged in repetitive upper-limb tasks.¹ Burden of this disease varies in different occupational groups. It frequently affects individuals who engage in sports like tennis, squash, badminton, or any activities that involve frequent wrist extension, radial deviation, and/or forearm supination.² Common job in police personnel is weapon handling which involves all the movement of forearm and wrist.

It has a significant financial burden and major cause of

absenteeism among active individuals. LE is particularly common in jobs that exert strain on the upper limbs, and factors such as heavy lifting and repetitive motions have been identified as contributing elements.³ Weapon handling can be an associated factor among police personnel with LE.

Diabetes, soft tissue disorders, and mental health issues like depression can elevate the likelihood of experiencing this condition.⁴ Association of diabetes mellitus with lateral epicondylitis has not been much studied.

The aim of this study was to study the prevalence of LE and identify the associated factors such as weapon handling and comorbidities such as diabetes mellitus.

METHODS

This descriptive cross-sectional study was conducted from 1 January 2025 to 31 March 2025 at the Outpatient Department of Pain and Orthopedics of Nepal Police Hospital, Kathmandu, Nepal. Ethical approval for the study was obtained from the

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Institutional Review Committee (Reference number: 28). We enrolled patients presenting to the outpatient department with complaints of elbow pain. The patients aged 20-50 years of age were included into the study regardless of gender. The patients with elbow fractures, rheumatoid arthritis, cubital tunnel syndrome (CBTS), thoracic outlet syndrome, or a history of corticosteroid use were excluded from the study. Convenience sampling method was used.

The sample size was calculated using the following formula:

$$n = \frac{Z^2 \times p \times q}{e^2}$$
$$= \frac{1.96^2 \times 0.50 \times 0.50}{0.07^2}$$
$$= 196$$

Where,

n= minimum required sample size

Z= 1.96 at 95% of Confidence Interval (CI)

p= prevalence taken as 50% for maximum sample size calculation

q= 1-p

e= margin of error, 7%

The calculated sample size was 196. However, the final sample size taken was 198.

All participants were included only after signing an informed consent form. In addition to the PTREE questionnaire, specialized physical tests that include Cozen's and Mill's tests, along with ultrasonography, were utilized to confirm diagnoses of lateral epicondylitis. The Patient-Rated Tennis Elbow Evaluation (PTREE) questionnaire used for the evaluation of tennis elbow comprises 15 questions: the first five concerning the pain in the elbow, and the remaining 10 questions concerning the function of the elbow.^{5,6}

Age, gender, and BMI of patients suffering from lateral epicondylitis were recorded using performa of our study. Medical history, occupational details such as (repetitive tasks, weapon use, mechanics, plumbers, and physical training routines), associated comorbidities, and history of prior injuries were noted.

Analyses of data were performed upon completion of the study. Data were entered and tabulated in MS Excel and analyzed using descriptive statistical methods, IBM SPSS statistics version 21. Point estimate and 95% Confidence Interval were calculated. Mean±SD and median were used for continuous variables, and number and percentage (%) were used for categorical variables.

RESULTS

Among 198 individuals, the prevalence of lateral epicondylitis among police personnel presenting to the Orthopedic OPD and Pain clinic OPD with elbow pain was found to be 51 (25.76%) (19.67-31.85, 95% CI).

The mean age was found to be 36.065±7.99 years and mean BMI was 24.63±8.49 kg/m² (Table 1).

Table 1. Mean age and BMI of the patients presenting with elbow pain.

Variables	Mean±S.D
Age in years	36.065±7.99
BMI	24.63±8.49

The majority of the patients diagnosed with lateral epicondylitis were males 110 (55.55%) (Table 2).

Table 2. Gender distribution of patients presenting with elbow pain.

Variables	n (%)
Male	110 (55.56)
Females	88 (44.44)

Among the 198 patients, 89 (44.95%) majority were involved in weapon handling which is a common job in police personnel. Among 198 subjects, 21 (10.61%) persons were suffering from diabetes.

Among 51 patients diagnosed with LE, 30 (58.82%) patients were involved in weapon handling. Similarly, among them, 10 (19.61%) subjects had diabetes mellitus.

DISCUSSION

The prevalence of lateral epicondylitis among police personnel was found to be 51 (25.76%). The study of Koichiro Yanai et al has a prevalence of 5.5% which is less than in our study. Healthcare workers are too involved in activities that require gripping and repetitive movement but because of more prolonged periods of weapon handling among police personnel, prevalence has been higher than healthcare workers. This study evaluated the prevalence of LE among 544 hospital healthcare workers. LE was diagnosed in 30 individuals with a prevalence of approximately 5.5% due to long working hours, prolonged posturing, and repetitive movements. LE was independently associated with age and smoking history.⁵

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A study done by Hira Akbar, Seher Akbar et al among housewives in Lahore had prevalence (39.33%) higher than our study. Prolonged supination and pronation movements, twisting (wringing, turning) and rolling activities (stirring and mixing) may be responsible for high prevalence among housewives. Our study has a prevalence of 25.76%. A total of 150 participants, all women aged between 25 and 50 years or older, were involved in the study. The study revealed that the prevalence of lateral epicondylitis is 39.33% among housewives. Among those diagnosed with lateral epicondylitis, 59.32% (35 out of 59) were suffering from chronic pain, while 40.67% (24 out of 59) were experiencing acute pain. Additionally, 54.24% (32 out of 59) of the individuals with lateral epicondylitis encountered functional disability in specific activities, whereas 28.81% (17 out of 59) reported functional disability in their everyday tasks.⁶

The study done by Dhakal et al showed increased risk of developing LE among housewives and farmers as it has included people from different occupations. In our study, LE was associated with people involved in weapon handling though there were police personnel involved in computer use, plumbing, tailoring and sports activities. This observational study was conducted at Bir Hospital in Kathmandu, Nepal. A total of 97 patients diagnosed with tennis elbow were primarily in the 41-50 age range, with a higher prevalence in females (62%). Additionally, it was observed that housewives (31%) were the most commonly affected group. The study concluded that there is a professional risk of developing tennis elbow among housewives, farmers, and shopkeepers in the Nepali context. Relying on a single treatment method is not effective for the long-term management of tennis elbow.⁷

Walker Bone et al did study in a very large population which showed prevalence of LE as 0.7%, which is lower than our study. The population size of our study is only 198. Due to vicious use of the upper arm for prolonged periods along with twisting and gripping movement may be responsible for Lateral epicondylitis in police personnel using weapons.⁸ The goal of Walker Bone et al is to investigate the link between occupational exposures and both lateral and medial epicondylitis, as well as the impact of epicondylitis on sickness absence in a sample of working-aged adults. Among 6,038 participants, 636 (11%) reported experiencing elbow pain during the past week. Only 0.7% of those surveyed had been diagnosed with lateral epicondylitis, while 0.6% had medial epicondylitis. Lateral epicondylitis was found to be more prevalent among individuals engaged in manual labor (OR 4.0, 95% CI 1.9-8.4). In multivariate analyses, repetitive bending or straightening of the elbow for more than one hour a day was found to be independently linked to both lateral (OR 2.5, 95% CI 1.2-5.5) and medial epicondylitis (OR 5.1, 95% CI 1.8-14.3). About 5% of adults experiencing epicondylitis took sick leave due to their elbow issues in the last year, with a

median absence of 29 days. Study concluded Repetitive exposure to bending/straightening the elbow was a significant risk factor for medial and lateral epicondylitis. Epicondylitis is associated with prolonged sickness absence in 5% of affected working-aged adults.

Prevalence of LE in study done by Eleonore Herquelot and colleagues is 2.4% which is lesser than our study group. The Study involved 3,710 workers to investigate work-related risk factors for lateral epicondylitis and other types of elbow pain within the workforce. Among the participants, 389 (10.5%) reported elbow pain unrelated to lateral epicondylitis, while 90 (2.4%) were diagnosed with lateral epicondylitis. Significant risk factors identified included age, body mass index (greater than 25), and low social support (noted only in men). This study highlights the strong connections between combined physical exertion, elbow movements, and the occurrence of lateral epicondylitis.⁹

Rahman Siri et al conducted a study which has a prevalence of 1.3% less than in our study. This study involved 5,871 participants in Finland to assess the occurrence of lateral and medial epicondylitis and to explore their associated risk factors. Out of the 5,871 participants, 4,783 (81.5%) were included in the analysis. The recognized prevalence of lateral epicondylitis was 1.3%, while medial epicondylitis had a prevalence of 0.4%. The prevalence rates did not show any significant difference between genders. Epicondylitis is relatively prevalent among working-age individuals within the general population. Factors related to physical load, smoking, and obesity were significant contributors to the development of epicondylitis.¹⁰

Otoshi Kenichi et al concluded chronic hyperglycemia is associated with Lateral epicondylitis. The prevalence of Lateral epicondylitis in our study (25.75%) which is higher than this study (2.5%). Diabetes mellitus can be correlated with the occurrence of Lateral Epicondylitis (LE) in our study. This study involved 1,777 individuals to determine the prevalence of epicondylitis within the Japanese general population and to explore the related risk factors. The rates of lateral and medial epicondylitis were found to be 2.5% and 0.3%, respectively. Individuals with chronic hyperglycemia (HbA1c ≥ 6.5) were observed to have a 3.37 times greater likelihood of developing lateral epicondylitis compared to those maintaining favorable glycemic control (HbA1c < 5.5) (95% confidence interval (CI) 1.16–8.56). Factors such as age, sex, occupational status, smoking and alcohol preferences, along with other metabolic factors, did not show a significant association

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with an increased risk of lateral epicondylitis.¹¹

A significant amount of research has been conducted on very large populations, while our study comprises a sample size of 198. This investigation could benefit from a larger population size. Concerning the link between LE and Diabetes, a more extensive study could be carried out.

CONCLUSIONS

The prevalence of lateral epicondylitis among police personnel was found to be higher than other studies. Further large scale prospective studies are recommended for more accurate and generalisable results.

Conflict of Interest: None

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