

the prevalence of lateral epicondylitis in public and its incidence among specific professional populations. The prevalence of epicondylitis might be several times higher in professions such as the food processing and forestry (Sanders Maradit, Bryan, Ransom, Smith & Morrey, 2015; Bretschneider, Los, Eygendaal, Kuijer & Molen, 2022). The pain experienced in epicondylitis is restricted to either the medial or lateral epicondyle of the humerus, and it travels across upper extremity and worsens when the wrist or hand is moved in any direction. People affected by epicondylitis have trouble performing gripping tasks due to discomfort experienced at their elbow.

Lateral epicondylitis is known to have a greater prevalence than medial epicondylitis, with the symptoms typically lasting from a few weeks to a few months; very rarely it may develop into a chronic condition if adequate treatment is not given (Vaquero, Barco & Antuña, 2016). LE is found commonly in the individuals between forty and sixty years of age, with females found to have a greater tendency to be affected than males (Chen, Shen, Zhang, Chen & Zheng, 2024; Park, Gwark, Im & Na, 2021). There exists debate regarding the relationship of LE with gender, with some studies obtaining a positive correlation; while others argue that LE and gender do not correlate (Shiri, Viikari, Varonen & Heliövaara, 2006). In this regard, estimated prevalence of LE among individuals who are employed in occupations where they are required to perform repetitive movements across hands and arms is approximately 1 to 12.2%. Workplace physical factors such as repetitive motions at the wrist and elbow joints, tasks requiring stronger hand grips, using vibrating tools, as well as lifting weights greater than five kilograms, might be risk factors for this condition (Palmer, Harris & Coggon, 2007). There is a high prevalence of LE in painters in Peshawar, with all age groups being affected (Rehman, Raza, Qureshi, Amin & Atif, 2025).

LITERATURE REVIEW

Numerous methods are used to confirm a diagnosis of epicondylitis (Soares, Souza & Ribeiro, 2023). Magnetic resonance imaging and diagnostic ultrasound are useful radiological tools for identifying inflammation along tendons, however, they cannot be used as standalone tests to confirm analysis of lateral epicondylitis (Krogh, Fredberg, Ammitzbøll & Ellingsen, 2020). The epicondylitis can be observed on sonography as tendon thickening and thinning, poor tendon definition, and decreased tendon echogenicity. Although this is an inexpensive alternative to resonance imaging ultrasound has lower sensitivity in identifying the inflammation in tendons (Shahabpour, Kichouh, Laridon, Gielen & Mey, 2008). Specific clinical tests, such as the Chair, Cozen, Mill tests, be used to diagnose LE (Karanasios, Korakakis, Moutzouri, Pantazopoulou & Gioftsos, 2022) These special tests are frequently performed during the physical examination of patients offering with LE, to repeat disquiet individuals experience in activities, confirming diagnosis of LE. Many tools exist to assess the functioning of LE, thus one such tool is Patient Rated Tennis Elbow Evaluation Questionnaire (Shafiee, MacDermid, Walton, Vincent & Grewal, 2022).

It is established as a simple and accurate tool for evaluating chronic lateral epicondylopathy in numerous, independently conducted studies, and has the potential to evolve into a standard tool for tennis elbow clinical research due to its simplicity (Rompe, Overend & MacDermid,

2007). Chefs will likely suffer from LE owing to the repeated nature of chopping, stirring, and plating, over sustained periods. Accounting for lunch or dinner rush, people employed in this profession need to increase their rate of work to keep up with customer demands where the physical demands are high and risk for the musculoskeletal injuries like lateral epicondylitis is preeminent (Matloob, Fatima, Baig, Khalid, Irfan, Hashim & Tabassum, 2022). The restaurant cooks are likely to suffer from lateral epicondylitis than other workers perform less physically demanding jobs because of their frequent use of strong, repetitive hand and arm chores, over extended periods during day including prevalence of lateral epicondylitis with occupational factors. Tandoor chefs have a different role from traditional chefs; in that, their main job is to roll dough all day long. A typical workday for chefs can last anywhere amid eight to twelve hours day, during which they perform repeated flexion and extension movements across their elbows.

This repetitive nature of their occupation makes them highly susceptible to musculoskeletal disorders, particularly LE (Sayampanathan, Basha & Mitra, 2020). LE can affect grip strength; one study found that workers with LE had significantly lower wrist extensor strength (Kim, Weon & Kwon, 2024). Another feature of interest is the angle at which tandoor chefs work. Due to high demand they have to quickly roll out dough their upper limbs are in a rotated position, which can cause greater stress of elbow and wrist joints. One study hypothesized that increase in ulno-humeral angle in patients with LE reflects adaptive change secondary to compressive forces acting on lateral aspect of elbow (Yurteri & Mercan, 2024). At microscopic level changes happen due to LE. Ultrasonography revealed high focal hypoechoic change, microcalcification, erosive cortex, and neovascularity in people with LE pathology (Hung, Chen, Chang, Wang, Hung & Wang, 2025). There is partial knowledge of prevalence of epicondylitis among tandoor cooks and its severity. This study was conducted to determine incidence of LE among tandoor chefs in Multan and to note positive association between the nature of their job and presence of LE.

RESEARCH METHODOLOGY

This descriptive cross-sectional study was performed on eighteen tandoors in Multan. Ethical approval for this study was given by the ethical review board of Lahore University. Written consent was obtained from all participants in this study before enrolling in the study, and they were informed that they were free to leave the study if they felt the need to. The data obtained from participants was kept confidential, and only principal investigator had access to records. Participants were selected through non-probability convenient sampling. The sample size of this study was calculated using OpenEpi software. Thus, the confidence interval of 95% and a margin of the error of 5% was used and a sample size of 111 was obtained (Afzal, Zakaullah, Memon, Nisar, Touqeer & Shabir, 2021). The participants who met the eligibility requirements (males amid ages of 25 to 45, and who performed long duty hours daily) were recruited for the study.

Those with previous history of injury to elbow, any upper limb deformities, surgical history, or currently undergoing any medication and treatment were excluded from participating in the study. In this connection, after obtaining the consent, and explaining the purpose of the study,

Cozen’s test was performed for the diagnosis which thus involved providing resistance against movement to illicit a pain response, which is considered a positive test. PTEREE was also filled. Demographic data was also recorded to note any correlation between age, gender, smoking status, and prevalence of LE. Data analysis was performed using Statistical Package for Social Sciences version 26. Responses were analyzed to obtain descriptive summaries and frequency analysis of the data for qualitative variables was performed. A p-value of 0.05 was considered significant.

RESULTS OF STUDY

Table 1
Association between Age and PTEREE

Age	Scores			Total
	Mild pain	Moderate pain	Severe pain	
25-30	25	18	1	44
31-35	9	12	1	22
36-40	13	8	2	23
41-45	10	10	2	22
Total	57	48	6	111

The mean age of tandoor chefs in this study was 34.02±6.507 years with a minimum age of 25 years and a maximum age of 45 years. Out of 111 tandoor chefs/cooks 53(47.7%) had a positive Cozen’s test. The majority of the participants involved in this study were between 25-30 years of age. Over 50% of this population had mild pain whereas remaining had moderate to severe pain.39(35.1%) responded yes to smoking. Almost half of the population (44.9%) engaged in repetitive activities for over 2 hours a day, 32(28.8%) engaged in repetitive hand movements 1 hour a day, and 29(26.1%) had 1 to 2 hours of hand movements per day. 57(51.4%) experienced mild pain/disability, 48(43.2%) had moderate pain/disability, and 6(5.4%) had severe pain/disability. The PTEREE scores were matched according to age ranges, and these are summarized in table-1.

Table 2
P-values of LE with Age and Smoking Status

	P-Values	
	Age	Smoking status
Presence of LE	0.145	0.807

No significant correlation was noted for presence of LE, age and amid LE and smoking status (Table 2).

DISCUSSION

The cooks often experience LE due to their work's repetitive and physically demanding nature. Research has shown that LE is more common in the work settings compared to the public, with

prevalence ranging from 1.3 to 12.2%. LE is the most prevalent among individuals aged 20-35 working with tandoor, and the prevalence continues to rise among those aged 35-54 (Chen et al., 2024). This correlates with the results of our study, where the participants' age was between 25 to 45 years. The long-term repetitive movements cause degeneration of soft tissue structures, which is a contributing factor to musculoskeletal disorders. Although age did not appear to be correlated with prevalence of LE, further studies may be performed to validate these findings. While some studies have suggested potential link between smoking and reduced blood flow to tendons leading to lateral epicondylitis others found no such association. Alcohol consumption may impede blood flow to the root of the common extensor tendon, thus possibly leading to vascular necrosis (Sanders et al., 2015). Alcohol consumption was not questioned in this study, however among the participants in this study with lateral epicondylitis, 35.1% were found to be smokers.

This may suggest a causal link between the prevalence of LE and smoking status. In this study smoking did not have a significant association with LE. The criteria for diagnosing LE include elbow pain, tenderness on lateral epicondyle when palpated, and pain during resisted wrist isometric extension (Matloob et al., 2022). While other studies just call for one of two criteria, some require both for a conclusive diagnosis. In this linking, in many epidemiological studies, prevalence may vary depending on diagnostic criteria, reflect on the importance of addressing occupational health risks. Cozen test (80.1%), local palpation (74.6%), and Mill's test were the most frequently used maneuvers in clinical diagnosis (60.2%). (Sanders et al., 2015). This study used Cozen's test which showed 47.7% positive data with LE. This testing measure has shown significant correlation, and it has demonstrated high accuracy as diagnostic tool (Karanasios et al., 2022). Qualitative study that included participants from five different working populations reported that prevalence of LE among those who prepare food is 5.2%. The previous research on cooks indicated that epicondylitis of the lateral side was 6 times more frequent than medial epicondylitis and dominant hand was more frequently affected due to repetitive exertion (Fan, 2009).

Tandoor cooks have one single task which is performed repetitively, over long hours. There is no variation in the type of activity performed. This factor would suggest that they would be highly susceptible to musculoskeletal disorders, even more so than regular chefs. Our study only included tandoor chefs. A comparative study would help classify the risk of work-related musculoskeletal disorders in these at-risk populations. The current study shared similarities with Karen et al., who concluded that repeated wrist movements caused a significant increase in the incidence of lateral epicondylitis (Afzal et al., 2021). Of 3231 restaurant employees, 171 majority men had reported lateral elbow pain as a result of frequent elbow joint movements (Palmer et al., 2007). Furthermore, a study that examined the quantitative exposure-response link between physical burden and prevalence of LE in workers using 732 restaurant employees concluded exerting oneself vigorously and combining forceful lifting with forearm supination were important physical risk factors for the LE. Although some studies have found a similar incidence in both sexes, women have been known to have a greater rate of epicondylitis than males.

CONCLUSION

The findings of this study conclude that LE is highly prevalent among tandoor cooks owing to their repetitive nature of work. Age and smoking status did not show a significant correlation; however, pain is a common symptom among tandoor cooks, however 95% of the population reported mild to moderate pain which was suspected due to the repetitive nature of their jobs. The nature of their jobs and the young age of the participants suggest a cause for concern due to chronic nature of LE and limited improvement if appropriate rest is not given. Cozens test has also shown to be a highly effective measure in diagnosing LE. The findings of this study be used to help prevent these at-risk individuals from developing LE, and ultimately requiring medical attention to recover if preventive measures are not taken to halt the disorder from progressing.

Research Highlights

- ✓ The lateral epicondylitis is prevalent among people who perform repetitive actions.
- ✓ Prevalence of lateral epicondylitis in tandoor cooks has not been studied previously.
- ✓ The Age factor as well as smoking history seem to be likely factors in its prevalence.
- ✓ This study did not evident to find a correlation between the age and smoking status.
- ✓ There was significant prevalence of LE among tandoor cooks enrolled in this study.

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