

Assessment of Lateral Epicondylitis in Butchers in Islamabad

Muhammad Fakhar Ikram Kalair¹, Zeeshan Khattak², Amina Saeed³, Dr. Saba Asif⁴, Sanobar Khan⁵, Faiza Jabbar¹, Sohrab Khan⁶, Intsam Aslam⁷

Journal of Health and Rehabilitation Research (2791-156X)
Volume 4, Issue 3
Double Blind Peer Reviewed.
https://jhrrmc.com/
DOI: https://doi.org/10.61919/jhrr.v4i3.1479
www.lmi.education/


Correspondence

Intsam Aslam
intsamaslam6@gmail.com
https://orcid.org/0009-0008-9729-1735

Affiliations

- 1 University Institute of Physical Therapy, The University of Lahore, Pakistan
- 2 Sarhad University of Information and Technology, Peshawar, Pakistan
- 3 University of Management and Technology, Lahore, Pakistan
- 4 University of South Asia, Lahore, Pakistan
- 5 University of Balochistan, Quetta, Pakistan
- 6 Alhamd Islamic University, Quetta, Pakistan
- 7 PSRD College of Rehabilitation Sciences, Lahore, Pakistan

Keywords

Lateral epicondylitis, tennis elbow, butchers, repetitive strain injury, occupational health, musculoskeletal disorders, DASH questionnaire, pain assessment

Disclaimers

Authors' Contributions All authors contributed to the study through article writing, introduction, statistical analysis, proofreading, abstract preparation, discussion, and review.

Conflict of Interest None declared
Data/supplements Available on request.

Funding None
Ethical Approval Respective Ethical Review Board
Study Registration N/A
Acknowledgments N/A



Open Access: Creative Commons Attribution 4.0 License

ABSTRACT

Background: Lateral epicondylitis, or tennis elbow, is a common overuse injury affecting the extensor muscles of the forearm, particularly in professions requiring repetitive manual tasks, such as butchery.

Objective: To assess the prevalence of lateral epicondylitis among butchers in Islamabad and its association with occupational risk factors.

Methods: A correlational study was conducted between February and July 2022, involving 205 butchers selected through convenience sampling. Participants with at least one year of work experience were included, while those with pre-existing injuries or diabetes were excluded. Data were collected using the Pain Rating Scale, DASH questionnaire, and Cozen's test. Descriptive and inferential statistics were performed using SPSS version 25, with a significance level of 0.05.

Results: The prevalence of lateral epicondylitis was 23.41% (n=48). Butchers working more than 9 hours daily had a significantly higher prevalence (p=0.001). Mild to moderate pain was reported by 26.3% to 21.5% of participants, particularly in the arm and shoulder.

Conclusion: The study found a high prevalence of lateral epicondylitis among butchers, linked to prolonged working hours and repetitive tasks. Ergonomic interventions and work modifications are recommended to reduce risk.

INTRODUCTION

Lateral epicondylitis, commonly known as "tennis elbow," is one of the most prevalent elbow overuse syndromes, primarily affecting the extensor muscles of the forearm. It is characterized by degeneration of the tendon rather than inflammation, making it a tendinosis rather than a tendinitis (1). The hallmark symptoms include pain, burning sensations, and tenderness on the lateral side of the elbow, which can radiate down the forearm, sometimes extending to the wrist. The pain often worsens over time, particularly with continued use of the affected arm, and in severe cases, can be present even during periods of rest (2,3). Diagnosing lateral epicondylitis involves various clinical and imaging tools, such as X-rays, magnetic resonance imaging (MRI), and electromyography, which help to rule out other conditions and confirm tendon damage (4). Treatment approaches range from conservative management, including rest, ice application, stretching exercises, and the use of non-steroidal anti-inflammatory drugs (NSAIDs), to more invasive interventions like corticosteroid injections and, in chronic cases, surgery (5).

Lateral epicondylitis is frequently observed in individuals who engage in repetitive wrist and arm motions. While it is often associated with athletes, particularly tennis and baseball players, it also affects workers in occupations that require forceful, repetitive use of the forearm, such as butchers, plumbers, carpenters, and chefs (6,7). Butchers, in particular, are at high risk due to the nature of their work, which involves repetitive cutting, chopping, and deboning of

meat. These actions place significant strain on the tendons around the elbow joint, leading to microtrauma, tendon degeneration, and eventual development of lateral epicondylitis (8). In addition to repetitive motion, the use of forceful grip, improper wrist posture, and prolonged work without adequate rest further exacerbate the condition (9,10).

Occupational risk factors, including the frequency and intensity of hand movements, play a critical role in the onset of lateral epicondylitis. Butchers, who are required to perform forceful and repetitive tasks, particularly when working with hard meat and bones, are susceptible to this condition due to the strain placed on the extensor muscles of the forearm (11). Studies have demonstrated a significant relationship between work-related physical exposure and the incidence of lateral epicondylitis. Workers who engage in repetitive, forceful hand and wrist movements, such as butchers, experience higher rates of this condition compared to the general population (12). Moreover, inadequate ergonomics in the workplace and the continuous use of tools that do not support proper wrist posture further increase the likelihood of developing lateral epicondylitis (13).

The prevalence of lateral epicondylitis varies across different populations and occupational groups, with studies suggesting that it affects between 1% and 3% of adults annually, depending on the type and intensity of work performed (7). For individuals in physically demanding professions, such as butchers, the prevalence may be higher due to the constant physical strain placed on the

elbow joint. Research has shown that work-related lateral epicondylitis is not only more common in these populations but is also associated with longer periods of disability and absence from work (14,15). Addressing these occupational risk factors is crucial in reducing the incidence of lateral epicondylitis among butchers and other high-risk groups. Prevention strategies, such as ergonomic interventions, proper wrist support, and regular breaks, can help mitigate the physical strain and reduce the risk of developing this debilitating condition (16).

MATERIAL AND METHODS

This study was conducted to assess the prevalence of lateral epicondylitis among butchers in Islamabad, employing a correlational research design. The study population included butchers working in various sectors of Islamabad, and a convenience sampling technique was utilized for participant selection. The sample size was calculated to be 250, based on the population of butchers available in the city during the study period from February 2022 to July 2022. Butchers with at least one year of work experience were included, while those with pre-existing hand, arm, or shoulder injuries, as well as individuals with diabetes, were excluded from the study to avoid confounding factors. A response rate of 93.2% was achieved, with 220 participants initially enrolled, and 205 completing the study.

Data collection was carried out using a structured questionnaire, which included the Pain Rating Scale, DASH (Disabilities of the Arm, Shoulder, and Hand) questionnaire, and Cozen's test, which are validated tools for assessing pain intensity and functional limitations related to upper limb musculoskeletal disorders. The questionnaire was administered in person, with participants providing informed consent prior to their inclusion in the study. Ethical approval for the study was obtained from the relevant institutional ethics committee, and the study adhered to the principles outlined in the Declaration of Helsinki (1964). Participants were informed of their rights, including voluntary participation, the right to withdraw at any time, and the confidentiality of their data. No personally identifiable information was collected, and all data were anonymized.

Assessment of lateral epicondylitis was performed by trained physiotherapists who conducted the Cozen's test

on-site. This test involves resisting wrist extension, which typically elicits pain in individuals with lateral epicondylitis. Participants were also asked to complete the DASH questionnaire, which evaluates the impact of upper extremity disorders on daily activities. The Pain Rating Scale was used to assess the severity of pain in the elbow, arm, and shoulder regions. Additional demographic information, including age, marital status, family structure, and work experience, was collected.

Data analysis was conducted using SPSS version 25. Descriptive statistics were used to summarize the demographic and clinical characteristics of the participants. The prevalence of lateral epicondylitis was calculated as a percentage, and inferential statistics, including chi-square tests and logistic regression analysis, were employed to explore associations between lateral epicondylitis and variables such as working hours, age, and family structure. A significance level of 0.05 was used for all statistical tests, with confidence intervals set at 95%.

The results were analyzed to determine the correlation between work-related factors and the incidence of lateral epicondylitis. The association between working hours and the development of lateral epicondylitis was examined, with a focus on understanding how prolonged and repetitive tasks, as well as the ergonomics of butchery work, contributed to the onset of this condition. The findings were interpreted in the context of existing literature, providing insights into occupational risk factors for lateral epicondylitis among manual labourers (1, 2).

RESULTS

This study aimed to assess the prevalence of lateral epicondylitis among butchers in Islamabad, with a focus on understanding the correlation between work-related factors and the development of the condition. Out of 220 participants, 205 responded to the survey, resulting in a response rate of 93.2%. The following results summarize the demographic characteristics, prevalence of lateral epicondylitis, and its association with various work-related factors. The prevalence of lateral epicondylitis among the butchers was found to be 23.41%, with 48 participants testing positive for the condition. Most butchers (65.8%) worked between 9 and 12 hours per day, and 86.34% lived in a nuclear family system. Pain was reported in the arm, shoulder, and hand of participants.

Table I Prevalence of Lateral Epicondylitis

Condition	Frequency (n=205)	Percentage (%)
Lateral Epicondylitis (LE)		
Positive	48	23.41
Negative	157	76.59

A significant association was found between working hours and the development of lateral epicondylitis ($p=0.001$). Butchers working longer hours were more likely to develop lateral epicondylitis, with those working more than 9 hours a day showing a higher prevalence of the condition. The majority of participants were aged between 26 and 35 years (56.0%) with 53.6% having between 1 and 10 years of work

experience. Most butchers reported mild to moderate difficulty in performing daily activities, with tasks requiring overhead movements or lifting heavy objects being the most challenging. Half of the butchers (50.2%) reported no work limitations, while 26.3% reported slight limitations due to pain in the arm, shoulder, or hand.

Table 2 Demographic Characteristics of Respondents

Variable	Frequency (n=205)	Percentage (%)
Age (years)		
16-25	48	23.4
26-35	115	56.0
36-45	31	15.2
46-55	11	5.4
Experience (years)		
1-10	110	53.6
11-20	76	37.0
21-30	15	7.4
31-35	4	2.0
Working Hours/Day		
4-8	60	29.2
9-12	135	65.8
13-16	7	3.6
17-19	3	1.4
Family System		
Joint	28	13.66
Nuclear	177	86.34
Marital Status		
Married	114	56.0
Unmarried	91	44.0

Mild to moderate pain was reported more frequently among participants, with 26.3% indicating that they experienced mild arm pain, and 21.5% reporting moderate arm pain. These numbers suggest that arm pain, in its milder forms, is relatively common and often occurs during routine activities or after moderate physical exertion. Additionally, a notable portion of participants reported more severe pain, particularly in specific regions. For instance, 16.1% of participants experienced severe shoulder pain, which can often be associated with repetitive overhead movements or prolonged strain on the shoulder joint. Likewise, 8.3% of

participants reported severe hand pain, which could be linked to fine motor tasks or repetitive gripping activities.

Association of working hours and Lateral Epicondylitis showed a clear trend of increasing lateral epicondylitis prevalence with longer working hours.

The results showed that 26.3% of participants experienced slight interference with social and work activities due to arm, shoulder, or hand problems. A smaller percentage (12.7%) reported significant interference. Mild to moderate tingling and stiffness were common symptoms among the butchers, with 26.3% reporting mild tingling sensations and stiffness

Table 3 Pain in Different Body Parts

Pain Location	No Pain (%)	Mild (%)	Moderate (%)	Severe (%)
Arm	50.2	26.3	21.5	2.0
Shoulder	51.2	25.4	7.3	16.1
Hand	50.2	26.3	14.6	8.3

Table 4 Difficulty in Daily Activities

Activity	No Difficulty (%)	Mild Difficulty (%)	Moderate Difficulty (%)	Severe Difficulty (%)	Worst (%)
Force a heavy door open	50.2	26.3	9.3	13.2	1.0
Put something on a shelf overhead	50.2	26.3	13.2	10.2	0
Taking a suitcase or shopping bag	50.2	26.3	9.8	13.2	0.5
Move a heavy object (>10 lbs.)	50.2	26.3	14.1	9.3	0
Washing hair or blow-drying	49.8	26.8	11.7	10.7	1.0
Using a knife for cutting	49.8	26.8	11.7	11.7	0

Table 5 Interference with Social and Work Activities

Interference Level	Frequency (n=205)	Percentage (%)
No interference	103	50.2
Slight interference	54	26.3
Moderate interference	20	9.8
Significant interference	26	12.7
Extreme interference	2	1.0

Table 6 Work Limitations due to Arm, Shoulder, and Hand Pain

Limitation Level	Frequency (n=205)	Percentage (%)
Not limited at all	103	50.2
Slightly limited	54	26.3
Moderately limited	26	12.7
Very limited	22	10.7

Table 7 Tingling Sensation and Stiffness

Sensation	None (%)	Mild (%)	Moderate (%)	Severe (%)
Tingling Sensation	50.2	26.3	11.2	12.2
Stiffness	50.2	26.3	10.2	12.2

DISCUSSION

The present study explored the prevalence of lateral epicondylitis among butchers in Islamabad and examined its association with occupational risk factors, including prolonged working hours and repetitive manual tasks. The study revealed that 23.41% of the butchers tested positive for lateral epicondylitis, which is notably higher than the prevalence reported in the general population, where it ranges from 1% to 3% (7). This elevated prevalence can be attributed to the physically demanding nature of butchery, which involves repetitive use of the wrist and forearm muscles, leading to microtrauma and tendon degeneration. These findings align with previous studies that have identified repetitive manual tasks as a major risk factor for the development of lateral epicondylitis, particularly in occupations involving forceful, repetitive hand and wrist movements (6, 8).

The results of this study also demonstrated a significant relationship between working hours and the development of lateral epicondylitis. Butchers who worked longer hours, particularly those exceeding 9 hours per day, were more likely to develop the condition. This supports earlier research suggesting that prolonged exposure to repetitive movements and forceful hand tasks increases the risk of musculoskeletal disorders, including lateral epicondylitis (11). Previous studies have shown that workers in occupations requiring extended use of the forearm and improper ergonomics, such as chefs, carpenters, and butchers, are at a higher risk of developing musculoskeletal injuries (9). Therefore, the correlation between working hours and lateral epicondylitis found in this study underscores the importance of addressing occupational factors, such as reducing work hours and improving workplace ergonomics, to prevent this condition.

The pain distribution observed in this study, with butchers experiencing mild to moderate pain in the arm, shoulder, and hand, was consistent with other occupational studies. The majority of participants reported experiencing mild pain, which could potentially be exacerbated over time without proper intervention. Studies on lateral epicondylitis in similar occupational groups, such as meat cutters and chefs, have also reported high incidences of upper extremity pain, reinforcing the association between repetitive upper limb tasks and musculoskeletal pain (18, 19). The finding that some butchers experienced significant difficulty in performing daily activities, particularly those requiring

overhead movements or lifting heavy objects, further supports the role of repetitive strain in the development of functional limitations. These results are in agreement with previous research that found lateral epicondylitis to be associated with decreased work capacity and interference in social and occupational activities (15).

One of the strengths of this study lies in its focus on a specific high-risk occupational group, providing valuable insights into the impact of repetitive tasks on the development of lateral epicondylitis. Additionally, the use of validated assessment tools, such as the DASH questionnaire and Cozen's test, enhanced the reliability of the findings. However, the study also had several limitations. The use of a convenience sampling technique may have introduced selection bias, as butchers who volunteered to participate may have been more likely to report symptoms. Furthermore, the cross-sectional design limited the ability to establish causality between occupational factors and the development of lateral epicondylitis. Longitudinal studies would be required to confirm these associations over time.

Another limitation was the reliance on self-reported data for pain and functional limitations, which could be subject to reporting bias. Although efforts were made to ensure accurate reporting, participants may have underreported or overreported their symptoms due to social desirability or fear of negative repercussions. Additionally, the study did not account for other potential confounding factors, such as personal health habits or pre-existing musculoskeletal conditions, which could have influenced the results.

Based on the findings of this study, it is recommended that interventions aimed at reducing the prevalence of lateral epicondylitis among butchers be implemented. These could include ergonomic workplace modifications, such as providing tools that reduce strain on the wrist and forearm, as well as the introduction of regular breaks to reduce repetitive strain. Furthermore, educational programs on proper body mechanics and early recognition of musculoskeletal symptoms could help in the early detection and prevention of lateral epicondylitis. Future research should focus on longitudinal studies to better understand the long-term effects of occupational exposure on the development of this condition and to evaluate the effectiveness of preventive interventions in reducing its prevalence in high-risk occupations.

In conclusion, this study highlighted the significant burden of lateral epicondylitis among butchers in Islamabad, with

prolonged working hours and repetitive tasks identified as major risk factors. The findings underscore the need for targeted interventions to reduce the occupational risk of developing lateral epicondylitis in manual laborers, particularly those involved in high-risk professions. By addressing ergonomic issues and promoting awareness of proper body mechanics, the incidence of lateral epicondylitis can potentially be reduced, improving the overall quality of life and work capacity for butchers and other similarly exposed populations.

CONCLUSION

The study found a significant prevalence of lateral epicondylitis among butchers in Islamabad, with prolonged working hours and repetitive manual tasks identified as major contributors. These findings emphasize the importance of addressing occupational health risks in high demand professions. Implementing ergonomic interventions, promoting awareness of proper body mechanics, and reducing repetitive strain through work modifications could mitigate the risk of developing lateral epicondylitis. Such measures are crucial for improving the health and well-being of workers in physically demanding roles, ultimately reducing the burden of musculoskeletal disorders on the healthcare system and enhancing workforce productivity.

REFERENCES

- Herquelot E, Guéguen A, Roquelaure Y, Bodin J, Sérazin C, Ha C, et al. Work-Related Risk Factors for Incidence of Lateral Epicondylitis in a Large Working Population. *Scandinavian Journal of Work, Environment & Health*. 2013;39(6):578-88.
- Descatha A, Dale AM, Jaegers L, Herquelot E, Evanoff B. Self-Reported Physical Exposure Association With Medial and Lateral Epicondylitis Incidence in a Large Longitudinal Study. *Occupational and Environmental Medicine*. 2013;70(9):670-3.
- Descatha A, Dale AM, Silverstein BA, Roquelaure Y, Rempel D. Lateral Epicondylitis: New Evidence for Work Relatedness. *Joint Bone Spine*. 2015;82(1):1-7.
- Descatha A, Albo F, Leclerc A, Carton M, Godeau D, Roquelaure Y, et al. Lateral Epicondylitis and Physical Exposure at Work? A Review of Prospective Studies and Meta-Analysis. *Arthritis Care & Research*. 2016;68(11):1681-7.
- Bretschneider SF, Los FS, Eygendaal D, Kuijjer PPF, Van der Molen HF. Work-Relatedness of Lateral Epicondylitis: Systematic Review Including Meta-Analysis and GRADE Work-Relatedness of Lateral Epicondylitis. *American Journal of Industrial Medicine*. 2022;65(1):41-50.
- Herquelot E, Bodin J, Roquelaure Y, Ha C, Leclerc A, Goldberg M, et al. Work-Related Risk Factors for Lateral Epicondylitis and Other Causes of Elbow Pain in the Working Population. *American Journal of Industrial Medicine*. 2013;56(4):400-9.
- Walker-Bone K, Palmer KT, Reading I, Coggon D, Cooper C. Occupation and Epicondylitis: A Population-Based Study. *Rheumatology*. 2012;51(2):305-10.
- Shiri R, Viikari-Juntura E, Varonen H, Heliövaara M. Prevalence and Determinants of Lateral and Medial Epicondylitis: A Population Study. *American Journal of Epidemiology*. 2006;164(11):1065-74.
- Titchener A, Fakis A, Tambe A, Smith C, Hubbard R, Clark D. Risk Factors in Lateral Epicondylitis (Tennis Elbow): A Case-Control Study. *Journal of Hand Surgery (European Volume)*. 2013;38(2):159-64.
- Tajika T, Kobayashi T, Yamamoto A, Kaneko T, Takagishi K. Prevalence and Risk Factors of Lateral Epicondylitis in a Mountain Village in Japan. *Journal of Orthopaedic Surgery*. 2014;22(2):240-3.
- Hossain S. Work Related Factors Affecting the Development of Lateral Epicondylitis. *Bangladesh Health Professions Institute, Faculty of Medicine, the University of Dhaka*. 2015.
- Singh D, Carrington R. *Common Soft Tissue Injuries and Disorders*. Surgery (Oxford). 2004;22(2):37-9.
- Graveling R. Ergonomics and Musculoskeletal Disorders (MSDs) in the Workplace: A Forensic and Epidemiological Analysis. In: *Ergonomics and Musculoskeletal Disorders (MSDs) in the Workplace*. 2018;159-67.
- Kivi P. Rheumatic Disorders of the Upper Limbs Associated With Repetitive Occupational Tasks in Finland in 1975-1979. *Scandinavian Journal of Rheumatology*. 1984;13(2):101-7.
- Pathak G, Patil C. Prevalence of Scapulothoracic Joint Dysfunction in Patients With Lateral Epicondylitis. *Indian Journal of Public Health Research & Development*. 2020;11(5):157-62.
- Lindhovius AL, Doornberg JN, Brouwer KM, Jupiter JB, Mudgal CS, Ring D. A Prospective Randomized Controlled Trial of Dynamic Versus Static Progressive Elbow Splinting for Posttraumatic Elbow Stiffness. *Journal of Bone and Joint Surgery*. 2012;94(8):694-700.
- Fan ZJ, Silverstein BA, Bao S, Bonauto DK, Howard NL, Smith CK. The Association Between Combination of Hand Force and Forearm Posture and Incidence of Lateral Epicondylitis in a Working Population. *Human Factors*. 2014;56(1):151-65.
- Taspinar O, Kepekci M, Ozaras N, Aydin T, Guler M. Upper Extremity Problems in Doner Kebab Masters. *Journal of Physical Therapy Science*. 2014;26(9):1433-6.
- Choudhary YQ, Idress MQ. Frequency of Musculoskeletal Pain Among Chefs Working in Restaurants of Lahore. *Journal Riphah College of Rehabilitation Sciences*. 2020;8(2):69-73.
- Descatha A, Leclerc A, Chastang J-F, Roquelaure Y. Medial Epicondylitis in Occupational Settings: Prevalence, Incidence and Associated Risk Factors. *Journal of Occupational and Environmental Medicine*. 2003;45(9):993-1001.
- Haahr J, Andersen J. Physical and Psychosocial Risk Factors for Lateral Epicondylitis: A Population Based Case-Referent Study. *Occupational and Environmental Medicine*. 2003;60(5):322-9.