Original Article

Prevalence of Lateral Epicondylitis among Chefs and its association with Age, Gender, and Working hours

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Abstract

Objective: The purpose of the study was to assess the association of age, gender, and working hours with the prevalence of lateral epicondylitis among chefs.

Study design: It was a Analytical cross sectional study.

Place and duration of study: The study was conducted from June 2023 to November 2023. A total of 200 chefs from different restaurants in Islamabad, Pakistan.

Material and Methods: The study was conducted from June 2023 to November 2023. A total of 200 chefs from different restaurants in Islamabad, Pakistan, were selected Using non-probability convenient sampling technique. Cozen's test was used to diagnose lateral epicondylitis, and the Patient-Rated Tennis Elbow Evaluation Questionnaire (PRTEEQ) assessed pain and impairment in participants who were having age between 25 and 54 and worked seven to ten hours a day. Using SPSS version 26, the chi-square test was used to analyze the data and find associations among the variables.

Results: According to the study, 68.5% of participants had positive Cozen's test results, showing a significant incidence of LE in the culinary industry. The age range of 30-34 had the highest frequency. Age and Cozen's test results showed a significant association ($p = 0.04$), as did working hours and Cozen's test results ($p = 0.00$). There was no significant association between gender and LE ($p = 0.84$). Younger chefs (25–29 years old) were more likely to have severe pain and disability; there was a substantial association between age and PRTEEQ levels ($p = 0.00$).

Conclusion: LE is a common work-related musculoskeletal disorder among chefs, especially in those with an age range of 30-34 years and having greater working hours. The study found that chefs of both sexes are equally vulnerable. These results emphasize the necessity of focused occupational health and ergonomic measures to lessen the effects of LE in this particular population.

Keywords: Tennis Elbow, Occupational Health, Musculoskeletal, Chefs, Ergonomics, Repetitive Strain Injury

1. Introduction

Lateral epicondylitis (LE), also known as "tennis elbow," occurs as a result of overusing the forearm's extensor muscles and is a common musculoskeletal illness that is characterized by discomfort and soreness on the lateral side of the elbow. Although historically linked to athletes, especially tennis players, LE is becoming more widely acknowledged as an occupational health issue impacting a variety of occupations requiring the repetitive and demanding use of the forearm muscles. Because of the nature of work, which frequently entails repetitive chopping, stirring, lifting heavy kitchen appliances, and other duties that significantly strain the forearm muscles and tendons, the profession of chefs is among those that are most at risk . [(1,2)] Due to the extended duration of repeated manual labour that they experience, chefs employed in high-pressure settings like commercial kitchens are more susceptible to having LE. This illness can cause severe pain and incapacity, which can have an impact on a person's general quality of life as well as their capacity to do their job. [(3,4)] The food service business in Pakistan's Capital city has seen tremendous

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expansion in the last ten years, which has resulted in a rise in the number of workers in this field. This study intends to fill a vacuum in the literature by investigating the frequency of LE among cooks in this region, a topic that has received little attention despite its development. [5,6]

Depending on the population investigated and the techniques employed to diagnose the illness, previous research carried out in different areas has revealed various prevalence rates of LE among workers performing repetitive manual jobs, with estimates ranging from 3% to 15% . [7,8,9] According to research by Walker-Bone et al., cooks, especially those who work in physically demanding workplaces, frequently suffer from musculoskeletal problems, including LE. These results are in line with a study by Walker-Bone et al. that found that chefs had high rates of upper limb disorders, with LE being one of the most common conditions. [10] Another study by Spahn et al. emphasized the effect of LE on workers' productivity, pointing out that because of pain and weakened grip strength, affected individuals frequently have considerable impairments in their capacity to execute work-related tasks. [11]

The working conditions for chefs in Islamabad, where the culinary business is fast changing, may provide comparable, if not worse, risks for developing LE. The risk of developing LE among cooks in this location may be increased by the lack of ergonomic solutions, long work hours, and the physical demands of the job (. [12,13] Even if there may be a high prevalence of LE among cooks in Pakistan, there is currently a dearth of information on this subject, which makes it challenging to create focused treatments meant to manage and prevent this condition in this community. [14,15]

For the purpose of guiding the creation of successful occupational health measures, it is essential to comprehend the prevalence and risk factors of LE among chefs. It is feasible to apply ergonomic changes, offer focused training, and adopt preventative interventions that can lessen the burden of LE in this population by understanding the particular occupational risks experienced by cooks. The purpose of the study was to assess the association of age, gender, and working hours with the prevalence of lateral epicondylitis among chefs. Additionally, this study may provide a basis for future research aiming at raising occupational health standards in the culinary industry in Pakistan and other areas with comparable working circumstances. [16,17]

2. Materials & Methods

This Analytical cross-sectional study was conducted on a convenience sample of 200 chefs of different restaurants in Islamabad, Pakistan. The sample size was calculated through Raosoft's sample size calculator with a population of 500, a 90% confidence interval, a 5% margin of error, and a 50% response rate. The study was reviewed and approved by the Institutional Review Board and Ethical Committee for Clinical Research of Bashir Institute of Health Sciences (Letter reference No B1-108/DPT-2023) and completed between June 2023 to November 2023. The chefs aged between 25-54 years, working 7-10 hours daily, were included in the study. Chefs with any recent history of shoulder, elbow, or wrist injuries, fractures, or known deformities were excluded. After completing the informed consent form, the eligible participants were enrolled, and the demographic data were recorded through a self-made questionnaire. Data for Pain and Functional disability were obtained through the Patient-Rated Tennis Elbow Evaluation Questionnaire

(PRTEEQ). [18] Cozen's test was performed to confirm the diagnosis of Lateral Epicondylitis among the subjects. [19]

Data Analysis:

Data was analysed using SPSS version 26. Mean and standard deviations are reported for the numerical data, while frequencies and percentages are reported for the categorical data. The chi-square test is applied to determine a significant association between two categorical variables.

3. Results

Out of a total of 200 participants, 48 individuals (24%) were aged between 25 and 29 years. A total of 52 participants (26%) fell within the 30–34 years age group. The 35–39 years age group comprised 27 participants (13.5%), while 23 participants (11.5%) were within the 40–44 years range. Additionally, 24 individuals (12%) were aged between 45 and 49 years, and 26 participants (13%) belonged to the 50–54 years' age group. The demographic data showed that out of the total 200 participants, 125(62.50%) were males and 75(37.50%) were females. 50% of participants were working 7-8 hours/day, while the remaining 50% were working 9-10 hours/day. The results revealed that 137(68.50%) of participants had positive Cozen's test, while 63(31.50%) were tested negative.

The total pain and functional disability scores showed that out of the total 200 participants, 43(21.50%) individuals had severe elbow pain and disability, 98(49%) had moderate elbow pain and disability, while 59(29.50%) chefs had mild elbow pain and disability. (Table 1)

Table 1: Age groups, gender distribution, working hours, and Pain severity

Age groups			**Cozen's test**		
	Frequency	Percentage			
25-29 years	48	24%	Positive	137	68.50%
30-34 years	52	26%	Negative	63	31.50%
35-39 years	27	13.50%	**PRTEEQ scoring***		
40-44 years	23	11.50%	Mild Pain	59	29.50%
45-49 years	24	12%	Moderate pain	98	49%
50-54 years	26	13%	Severe pain	43	21.50%
Gender					
Male	125	62.50%			
Female	75	37.50%			
Working hours					
7-8 hours/day	100	50%			
9-10 hours/day	100	50%			

**PRTEEQ: Patient-Rated Tennis Elbow Evaluation Questionnaire scoring*

According to the cross-tabulation results, the cozen's test came out positive in 34 individuals belonging to the age group of 30-34, which shows that this age group is the most affected. The Pearson Chi-square P-value of 0.04 indicates that the observed differences between Cozen's test results and age are statistically significant (Table 2).

Table 2: Association of age and Lateral Epicondylitis among chefs.

Results of Cozen's test					Results of PRTEEQ scoring*				
Age Group	Negative	Positive	Total	P value	Mild	Moderate	Severe	Total	P value
25-29 years	21	27	48	0.04	21	15	12	48	0.00
30-34 years	18	34	52		15	28	9	52	
35-39 years	2	25	27		2	22	3	27	
40-44 years	7	16	23		7	12	4	23	
45-49 years	6	18	24		6	14	4	24	
50-54 years	9	17	26		8	7	11	26	
Total	63	137	200		59	98	43	200	

The results showed that both male and female chefs are prone to develop lateral epicondylitis. Out of 125 male chefs, Cozen's test was positive in 85, making a total of 68%. Among the 75 female chefs, Cozen's test came out positive in 52, showing a positive percentage of 69.3%. The P value of 0.84 indicates that the observed differences between Cozen's test results and gender are not statistically significant, and both genders are equally prone (Table 3).

Table 3: Association between Gender and Lateral Epicondylitis among chefs.

Results of Cozen's test					Results of PRTEEQ scoring*				
Gender	Positive	Negative	Total	P value	Mild	Moderate	Severe	Total	P value
Male	85	40	125	0.84	36	64	25	125	0.69
Female	52	23	75		23	34	18	75	
Total	137	63	200		59	98	43	200	

The results of the association between working hours and lateral epicondylitis showed that chefs who work less than 8 hours have a lower chance of having the condition compared to those working 9-10 hours a day. The statistical data showed that 57 chefs working for 7-8 hours and 80 chefs working for 9-10 hours tested positive. The P value of 0.00 shows a statistically significant difference between working hours and positive Cozen's test (Table 4).

The result from PRTEEQ (Patient Rated Tennis Elbow Evaluation Questionnaire scoring) showed that the pain and functional disability were severe among the chefs with an age ranging from 25-29.

No significant statistical difference was observed between gender and PRTEEQ score(P=0.69), as both male and female chefs reported pain and functional disability. 36 males and 23 females demonstrated mild pain and functional disability, 64 males and 34 females demonstrated moderate pain and functional disability, while 25 males and 18 females showed severe pain and functional disability.

Association between working hours and PRTEEQ score showed statistically significant difference(P=0.00) as shown in Table 4.

Table 4: Association of working hours and Lateral Epicondylitis among chefs.

Results of Cozen's test					Results of PRTEEQ scoring*				
Working hours	Positive	Negative	Total	P value	Mild	Moderate	Severe	Total	P value
7-8	57	43	100	0.00	41	45	14	100	0.00
9-10	80	20	100		18	53	29	100	
Total	137	63	200		59	98	43	200	

**PRTEEQ: Patient Rated Tennis Elbow Evaluation Questionnaire scoring*

4. Discussion

This study aimed to explore the prevalence of lateral epicondylitis and its associated factors among chefs, with a focus on the association of age, gender, and working hours with this condition. The findings provide critical insights into the occupational health risks faced by chefs, particularly concerning musculoskeletal disorders.

The prevalence of positive Cozen's test results in this study was 68.5%, indicating a high incidence of lateral epicondylitis among chefs. This finding aligns with existing literature that underscores the occupational hazards associated with repetitive upper limb movements and forceful activities, which are common in the culinary profession. In a previous study, Walker-Bone et al. reported a high prevalence of musculoskeletal disorders in physically demanding jobs, particularly in occupations requiring repetitive motions. [(6)] Similarly, Verhaar JA emphasized that lateral epicondylitis is common among individuals engaged in repetitive forearm activities, highlighting the vulnerability of chefs to this condition. [(7)]

The significant association between age and Cozen's test results ($p = 0.04$) in this study mirrors findings from other studies that have identified age as a critical factor in the development of lateral epicondylitis. The highest prevalence was observed in the 30-34 age group. This pattern is consistent with previous research, which suggests that the peak incidence of lateral epicondylitis occurs in the third and fourth decades of life. [(20)] Haahr and Andersen found similar results, noting that lateral epicondylitis is most common among individuals aged 30-50, likely due to cumulative occupational exposure to risk factors. [(5)] The decrease in prevalence in older age groups may be due to changes in job roles or reduced physical demands, as suggested by Palmer et al. [(10)]

The lack of a significant association between gender and Cozen's test results ($p = 0.84$) suggests that both male and female chefs are equally at risk for developing lateral epicondylitis. This finding is supported by several studies that have also found no significant gender differences in the prevalence of lateral epicondylitis. [(8)] However, this contrasts with some research indicating a higher prevalence among females, possibly due to differences in muscle strength, ergonomic challenges, or reporting behaviors. [(14)] In a study, Shiri et al. found that women were more likely to develop lateral epicondylitis, which they attributed to differences in occupational exposure and biomechanics. [(21)] The uniformity of the tasks performed by male and female chefs in this study may account for the lack of significant gender differences observed.

A significant association between working hours and Cozen's test results ($p = 0.00$) was observed, with a higher prevalence of positive test results among chefs working longer hours (9-10 hours per day). This finding is consistent with research highlighting the impact of prolonged work hours on the development of musculoskeletal disorders. Prolonged exposure to repetitive tasks increases the risk of overuse injuries, as supported by van Rijn et al., who identified long working hours as a significant risk factor for lateral epicondylitis. [(14)] These results suggest that interventions aimed at reducing work hours or increasing rest breaks could be effective in preventing lateral epicondylitis among chefs.

The significant association between age and the Patient Rated Tennis Elbow Questionnaire (PRTEEQ) scores ($p = 0.00$) indicates that younger chefs, particularly those aged 25-29, experience more severe pain and disability. This contrasts with the prevalence of lateral epicondylitis, which was

highest in the 30-34 age group, suggesting that while the condition is more common in slightly older individuals, its impact in terms of pain and disability may be more pronounced in younger chefs. The lack of a significant association between gender and PRTEEQ scores (p = 0.69) further supports the notion that gender does not play a substantial role in the severity of lateral epicondylitis symptoms, aligning with findings from Descatha et al. [12] The significant association between working hours and PRsTEEQ scores (p = 0.00) underscores the role of work-related factors in the severity of symptoms, as longer working hours are likely to exacerbate both pain and disability. [15] It is recommended to conduct longitudinal studies with larger and more diverse populations to explore causality and long-term outcomes. The data regarding PRTEE scores and working hours were obtained through self-reported responses, which introduces the possibility of recall bias and subjective misreporting. Such biases may affect the accuracy of symptom severity and exposure duration, potentially influencing the observed associations.

Conclusion:

The findings of this study highlight the high prevalence of lateral epicondylitis among chefs in Islamabad, particularly among those aged 30-34 and those working longer hours. The lack of significant gender differences suggests that both male and female chefs are equally at risk. These results underscore the need for occupational health interventions focused on reducing repetitive strain and improving ergonomic practices in the culinary industry of Pakistan to prevent the onset and progression of lateral epicondylitis..

Disclosure /Conflict of interest:

Authors declare no conflict of interest.

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