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RESEARCH ARTICLE
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PREVALENCE OF MEDIAL EPICONDYLITIS AMONG PATIENTS WITH CERVICAL RADICULOPATHY

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ABSTRACT

Background: The symptoms of medial epicondylitis include pain on the medial side of the elbow that extends to the wrist. Cervical radiculopathy, which causes medial epicondylitis and other adult ailments, is most common in tailors, painters, carpenters, and other occupations where it developed early in life. Research on the prevalence of medial epicondylitis in patients with cervical radiculopathy indicates that the condition is becoming more common and that it is important to ascertain the burden of this condition. The goal of this study is to ascertain the prevalence of medial epicondylitis in patients with cervical radiculopathy between the ages of 20 and 60.

Objective: The objective of this study is to evaluate the prevalence of medial epicondylitis among patients diagnosed with cervical radiculopathy.

Methodology: The study was conducted in different hospitals of Gujrat and Wazirabad. The study was conducted on 189 participants with cervical radiculopathy under ethical considerations. The participants were selected who met the inclusion and exclusion criteria. Medial Epicondylitis Test (Golfer's Test) was applied on 189 participants. Its specificity is 92% and sensitivity is 95.2%. Consent was taken from the participant before taking data. If participants had any sort of queries those were addressed and cleared before any further data collection procedure.

Result: The findings indicate that medial epicondylitis affects 56.8% of patients with cervical radiculopathy.

Conclusion: Based on the results, it can be concluded that most of the patients who have cervical radiculopathy are at risk of having medial epicondylitis too.

Keywords: Medial epicondylitis, Cervical radiculopathy

Introduction:

The well-known overthrowing elbow injury known as "Golfer's elbow," or medial epicondylitis, is more common in athletes than in the general population and is caused by repetitive strain on the flexor tendon that is attached to the medial epicondyle. (1) It is not a serious or dangerous disease yet concerns the musculoskeletal system and occurs due to the repetitive movements of wrist and elbow. (2) Medial epicondylitis is the origin of the forearm's flexors and pronator muscles. Innervated by the median

nerve the flexor digitorum superficialis, flexor teres, and palmaris longus begin on the medial epicondyle. In addition, the ulnar nerve innervates flexor carpi ulnaris which insert on the medial epicondylitis. These muscles conjoined flexor tendon of the medial epicondyle of the humerus. [3]

Patients with medial epicondylitis complain about discomfort and soreness distal to medial epicondyle when engaging in sports and work-related tasks that put strain on the muscles. Elbow pain is exaggerated in overhead throwing motions. [4] Since medial epicondylitis is prevalent in people between the ages of 40 and 60, those who have it have an economic impact. It affects both males and females equally. Flexor tendon that originates from the medial aspect of the elbow is the main cause. [5]

Flexor carpi radialis and pronator teres are the tendons most frequently affected by medial epicondylitis are. Stability for flexion and valgus forces at the elbow is provided by the UCL and common flexor tendon. Even though it is called epicondylitis or epicondylalgia might be a better name, particularly in a chronic situation. Without the appearance of a clear-cut inflammatory process, the current literature suggests that the underlying process is degeneration and the creation of granulation tissue, which is known as tendinosis. It should be mentioned, nevertheless, that there isn't any conclusive proof that the early stage. [6]

As athletes are more prone to medial epicondyle, they present with the history of sudden ‘pop up’ sound in their elbow during acceleration and deceleration phases. A physical examination reveals swelling as well as tenderness at the bony prominence at palpation. [7]

The ulnar nerve and ulnar collateral ligament shouldn’t be sore in cases of isolated medial epicondylitis. To evaluate the ulnar collateral ligament, a vulgus stress test should not cause pain to worsen or instability. The Tinel sign and cubital tunnel compression test can be used to diagnose ulnar neuritis. To evaluate the ulnar nerve, neurological examination is required, which includes a 2-point discrimination test of the fifth digit. Medial epicondylitis and ulnar neuropathy are highly correlated. [8]

Compared to other imaging modalities, ultrasonography has several benefits, most notably dynamic examination in addition to its quick, affordable and targeted criteria. [9] While routine clinical examinations are primary means of diagnosing medial epicondylitis, imaging modalities should be used for the confirmation of pathology. Elbow pathologies are frequently diagnosed using new imaging modalities, most notably magnetic resonance imaging (MRI). For persistent elbow pain, MRI is the preferred. [10]

Prior to surgery, medial epicondylitis is treated with anti-inflammatory medication, physical therapy, elbow support and steroid injections. Nonsurgical therapy and open surgical management are treatment pillars. [11] Medial epicondylitis can be present along with cervical radiculopathy. Any ailment that compresses or irritates a spinal nerve root can cause radicular symptoms. The most common causes of impingement in younger patients, who are usually in their third or fourth decade of life, are disc trauma and herniation. The causal relationship mostly degenerates with age. The most frequent reason in the fifth and sixth decades was disc degeneration. Foraminal narrowing due to arthritic changes is usually the cause of causation in the seventh decade. [12]

Pain, paresthesia, numbness, or weakness can radiate into the arms because of cervical radiculopathy. There has been a minimal suggestion of a relationship between medial epicondylitis and the cervical spine, despite numerous associations of lateral epicondylitis with the cervical spine. [13] The symptoms of cervical radiculopathy include motor dysfunction, sensory loss, pain in the arms and neck, and changes in reflexes depending on dermatomal distribution. The natural history proves that conservative treatment is the first line of cervical radiculopathy. [14]

There are no recognized diagnostic criteria for cervical radiculopathy. Individuals who ha ve cervical radiculopathy often exhibit a range of symptoms, such as unilateral pain in the arms and neck combined with numbness, weakness, or abnormal reflexes. [15]

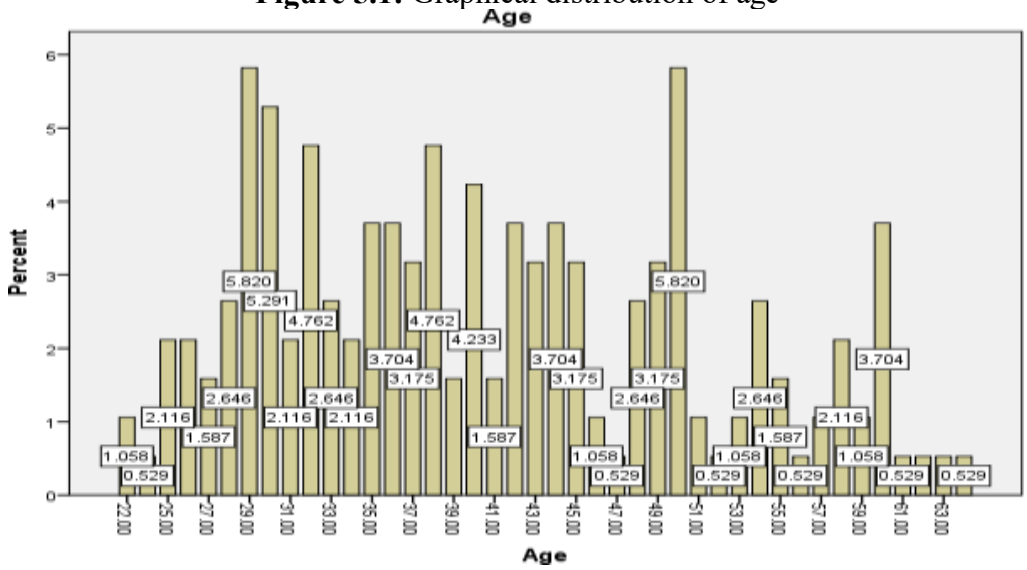
Cervical Radiculopathy is frequently diagnosed through a thorough physical examination and detailed history, but an MRI and CT should be used to confirm the diagnosis. The mainstay of conservative treatment for CR is immobilization, anti- inflammatory medications, manual therapy, and cervical traction. [16]

Although the spinal cord or nerve roots are not involved in cervical radiculopathy but posterior muscles of the neck and deltoid are affected.[17] In people with CR, the assessment of neurological outcomes is a recognized component of the clinical examination. This is examining motor function, reflexes, and sensibility (pin prick and light touch), and it is crucial in making surgical decisions. [18]
Chiropractors have been shown to relieve patients by manipulating the spine, mobilizing soft tissues, and using other manual therapies. It has been demonstrated that conservative management of cervical radiculopathy, which includes chiropractic care, improves pain, function, and quality of life in those who are impacted. [19]
In this study we will find prevalence of medial epicondylitis among patients with cervical radiculopathy. We hypothesize that patients of cervical radiculopathy will have incidents of medial epicondylitis. The outcome of this study will be helpful in raising awareness regarding medial epicondylitis.

Methodology:
The study was conducted in Gujrat and Wazirabad. Data of 189 patients were collected through non-probability sampling by using Medial Epicondylitis Test. After taking written consent, necessary demographic data including age and gender. The participants were selected that fulfill the inclusion criteria. Individuals of age 20-60yrs were included. This study was completed within 4 months after the approval of synopsis.
There were 189 participants. The inclusion criteria included both male and female patients diagnosed with cervical radiculopathy of age between25-60 yrs. The data was collected through applying Medial epicondylitis test and the specificity of test is 92%.
Consent was taken through consent form from participants before data. The medical epicondylitis test was conducted on the participant. To perform this test, the participant was in a comfortable position. I stabilize the humerus of the patient and palpate the medial epicondyle at the same time then passively supinate forearm of the participant extend through the wrist and extend the elbow fully. The test results are positive if the patient complains about sudden pain at the medial side of elbow.

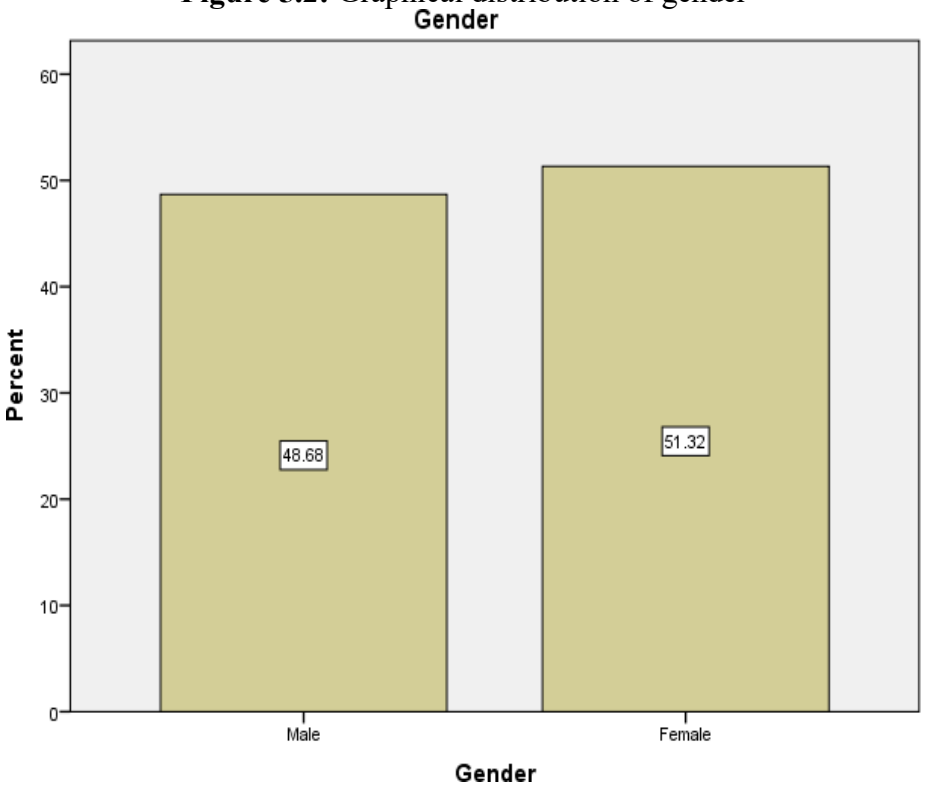
Results:
The participants in the study comprised of diagnosed patients of cervical radiculopathy. There was a total of 189 participants taken from different clinics and hospitals of Gujrat and Wazirabad on whom test was applied to check the prevalence of medial epicondylitis. The socio demographic characteristics of the study population are shown in figures 1,2 and 3. Most were age of 25 to 60 in which 92 (48.7%) were males and 97 (51.3%) were females.

Figure 5.1: Graphical distribution of age



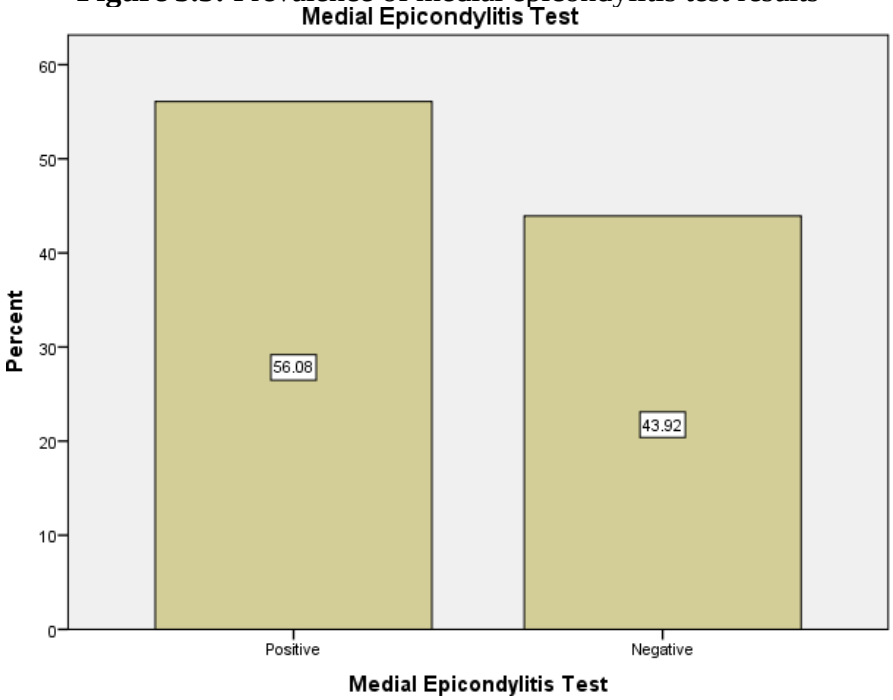
Participation of age greater than 25 were (15.8%) with age 30 – 50 were (78%) and with age greater than 50 were (6.2%).

Figure 5.2: Graphical distribution of gender



Total 189 participants were included out of which 92 (48.7%) were males and 97 (51.3%) were females. Which means more females participal

Figure 5.3: Prevalence of medial epicondylitis test results



Medial epicondylitis test was applied and tested on 189 patients out of which 92 (48.7%) were males and 97 (51.3%) were females. The results show that 106 (56.1%) participants were positive to the test and 83 (43.9%) participants were negative to test.

Frequency tables:

Table 5.1: Multiple modes exist. The smallest value of age, gender and medial epicondylitis test is shown in the table

Statistics

		Age	Gender	Medial Epicondylitis Test
N	Valid	189	189	189
	Missing	0	0	0
Mean		40.6614	1.5132	1.4392

Table 5.1 shows that the smallest mean value of age in statistical analysis is 40.6, mean value of gender is 1.51 and that of medial epicondylitis is 1.

Table 5.2: Descriptive analysis of age f patients participated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	22.00	2	1.1	1.1	1.1
	24.00	1	.5	.5	1.6
	25.00	4	2.1	2.1	3.7
	26.00	4	2.1	2.1	5.8
	27.00	3	1.6	1.6	7.4
	28.00	5	2.6	2.6	10.1
	29.00	11	5.8	5.8	15.9
	30.00	10	5.3	5.3	21.2
	31.00	4	2.1	2.1	23.3
	32.00	9	4.8	4.8	28.0
	33.00	5	2.6	2.6	30.7
	34.00	4	2.1	2.1	32.8
	35.00	7	3.7	3.7	36.5
	36.00	7	3.7	3.7	40.2
	37.00	6	3.2	3.2	43.4
	38.00	9	4.8	4.8	48.1
	39.00	3	1.6	1.6	49.7
	40.00	8	4.2	4.2	54.0
	41.00	3	1.6	1.6	55.6
	42.00	7	3.7	3.7	59.3
	43.00	6	3.2	3.2	62.4
	44.00	7	3.7	3.7	66.1
	45.00	6	3.2	3.2	69.3
	46.00	2	1.1	1.1	70.4
	47.00	1	.5	.5	70.9
	48.00	5	2.6	2.6	73.5
	49.00	6	3.2	3.2	76.7
	50.00	11	5.8	5.8	82.5

	51.00	2	1.1	1.1	83.6
	52.00	1	.5	.5	84.1
	57.00	2	1.1	1.1	91.0
	58.00	4	2.1	2.1	93.1
	59.00	2	1.1	1.1	94.2
	60.00	7	3.7	3.7	97.9
	61.00	1	.5	.5	98.4
	62.00	1	.5	.5	98.9
	63.00	1	.5	.5	99.5
	65.00	1	.5	.5	100.0
	Total	189	100.0	100.0	

Table 5.2 shows the age of participants. 189 participants greater than 25 were (15.8%) with age 30 – 50 were (78%) and with age greater than 50 were (6.2%).

Table 5.3: Descriptive analysis of gender of patients participated.

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
	Male	92	48.7	48.7	48.7
Valid	Female	97	51.3	51.3	100.0
	Total	189	100.0	100.0	

Table 5.2 shows that total 189 participants were included out of which 92 (48.7%) were males and 97 (51.3%) were females. Which means more females participated.

Table 5.4: Prevalence of medial epicondylitis test applied on patients.

Medial Epicondylitis Test

		Frequency	Percent	Valid Percent	Cumulative Percent
	Positive	106	56.1	56.1	56.1
Valid	Negative	83	43.9	43.9	100.0
	Total	189	100.0	100.0	

Table 5.4 shows that Medial epicondylitis test was applied and tested on 189 patients out of which 92 (48.7%) were males and 97 (51.3%) were females. The results show that 106 (56.1%) participants were positive to the test and 83 (43.9%) participants were negative to test.

Discussion:

This research was completed in 4 months with sample size 189 and age group 20-60 years. Only diagnosed patients of cervical radiculopathy in Gujrat and Wazirabad are selected. We visited different hospitals and clinics to collect data. This research was selected with the means to find out the prevalence of medial epicondylitis among patients with cervical radiculopathy (cross-sectional) study was used.

In this study, 20-60 ages were selected in which females have high ratio than males. A total of 189 participants, out of whom 106 were positive result of medial epicondylitis and 83 were negative result of medial epicondylitis.

Patients who fulfill the inclusion and exclusion criteria were chosen. Participants included were diagnosed with cervical radiculopathy, ranging from age 20-60 years, both males and females. The

study excluded participants who have Reported Chronic Myelopathy at C1-C7, Reported Spinal infections at C1-C7, reported cervical fractures, reported neurological disorders, postoperative patients, reported dermatological conditions, Reported Rheumatoid Arthritis.

Previous research was also discussed. A study on golf-related injuries was conducted concluded that 51.1% of participants experienced golf-related injuries in the last year. The most common injuries by anatomical region were: Upper extremity injuries (shoulder muscle strain, golfer's elbow, wrist sprain, and shoulder sprain). The frequency of golfing was found to be statistically significantly associated with golf-related injuries. This study shows that Medial epicondylitis is very common in golfers. In our study we will discuss the medial epicondylitis in patients to check the prevalence.

In 2022, 268 taxi drivers with an average age of 52.98 years (plus or minus 20.79 years). The drivers were asked about experiencing pain in the medial (inner) aspect of their elbow while driving. The results showed 130 drivers (48.5%) had no pain, 124 drivers (46.3%) had moderate pain, 14 drivers (5.2%) had severe pain. A chi-square test was applied, which revealed a highly significant result, indicating a high prevalence of medial elbow pain among taxi drivers. This study suggests that taxi drivers are at a high risk of developing medial elbow pain, possibly due to repetitive strain or overuse injuries from driving. So, it is clear from this study that medial epicondylitis is also common in drivers. As in our study, the drivers participated who were diagnosed with cervical radiculopathy, they also have medial epicondylitis.

Another study on Medial Epicondylitis Causes and Risk Factors was done in 2020. Most cases of medial epicondylitis are caused by occupation related factors, which contribute to many more cases than golf-related factors. Medial epicondylitis is an overuse injury involving the tendons that attach the muscles of the forearm to the bone on the inside of the elbow joint. It is caused by repeated, strenuous arm movements, especially those involving repetitive wrist flexion, forearm pronation or gripping. Golf is an activity that can put repetitive load on the tendons of the inside of the elbow, especially for beginners and those with incorrect weight shift and swing techniques. Other activities that involve repetitive gripping or wrist flexion, such as tennis, baseball, and weightlifting, can also cause medial epicondylitis. Medial epicondylitis is most common in people between the ages of 45-64. Women are more likely than men to develop medial epicondylitis. Medial epicondylitis usually affects the dominant arm. In our study, medial epicondylitis is more common in females and adults above age 40. According to occupation, drivers, painters, tailors, construction workers, and carpenters have medial epicondylitis.

In 2022 another study was conducted that involved 60 participants, with the majority (66.7%) aged between 20-35 years. Most chefs (above 63%) performed repetitive hand and wrist movements for over 2 hours daily. The majority (63.3%) of chefs were non-smokers. The Epicondylitis test revealed that 40% of cooks suffered from Epicondylitis (both medial and lateral). This study highlights the prevalence of Epicondylitis (medial and lateral) among chefs, which may be related to repetitive hand and wrist movements and long working hours. Medial epicondylitis is also common among chefs. Now we want to discuss medial epicondylitis among patients who are suffering from Cervical radiculopathy.

It was found that a majority of surgeons experiences elbow joint disorders, with no significant difference between male and female (82%) surgeons. The most common conditions reported were low back pain (56%) and neck pain (42%). Male surgeons were more likely to report certain conditions, including Medial epicondylitis, Lateral epicondylitis, Low back pain, Lumbar radiculopathy. This

study highlights the prevalence of MSK conditions among surgeons and suggests that male surgeons may be more likely to experience certain conditions, although this may be influenced by the age difference between male and female respondents. This study shows that medial epicondylitis is also common in surgeons. Now we will discuss Medial epicondylitis which is a MSK disorder in patients of different ages.

According to a study conducted in 2020, Epicondylitis is a chronic tendinosis caused by repetitive injury to the forearm extensor and flexor muscles, often related to work or sports. It has a clear occupational profile, like other chronic tendinopathies of the upper extremities. It affects 1-3% of

the population, with only 5% of cases being recreational tennis players. The syndrome typically affects people between 20-60 years old, with a peak prevalence in the fourth and fifth decades (40-50 years old). We want to check its prevalence =in diagnosed patients of cervical radiculopathy.

Conclusion:
Based on results, it can be concluded that there is a high prevalence of medial epicondylitis among patients with cervical radiculopathy.

7.1: **RECOMMENDATIONS**
- Conduct a longitudinal study to capture the development and progression of medial epicondylitis among patients with cervical radiculopathy.
- Further research needs to be done on intrinsic and extrinsic risk factors of developing medial epicondylitis among general population.
- Educate and screen patients for early detection and better management of medial epicondylitis.

Limitations:
- Medial epicondylitis among cervical radiculopathy patients can be difficult to identify since there are shared risk factors in both conditions such as age, posture and repetitive strain.
- Some of the patients lack interest and were not willing to participate in the research, thus delaying the procedure.

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