



# “PREVALENCE OF TENNIS ELBOW AND RELATED PAIN AND DISABILITY AMONG HOUSEHOLD WOMEN: A CROSS SECTIONAL STUDY ”

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## Abstract

**BACKGROUND:** Tennis elbow also known as lateral elbow tendinopathy, or tendinopathy of insertion of lateral epicondylar muscles. Epicondylitis is a condition described by intermittent pain at the muscle-tendon junction or at insertion points of the wrist extensors (lateral epicondylitis) in the elbow region. This study is aimed to find prevalence of tennis elbow and related pain and disability among household women.

**METHOD:** A cross sectional study was conducted by simple random sampling in Jalgaon city among 100 household women. Mills test was performed to diagnose tennis elbow and the positive participants were assessed for pain and disability using PRTEE questionnaire. The responses were collected from the participants and the results were calculated.

**RESULTS:** Majority of women were between the age group of 31-40(years)(34%), majority of women were reported with right hand dominance (87%). Only 28% women were reported positive for mills test.

**CONCLUSION:** The present study concluded that 28% household women are prevalent for tennis elbow. Out of the positive women 7% of total women have the severe pain and disability. And 43% that is majority of women have moderate pain and disability.

**KEYWORDS** – Tennis Elbow, Mill’s Test, Household Women, PRTEE.

## INTRODUCTION

Tennis elbow also known as lateral elbow tendinopathy, or tendinopathy of insertion of lateral epicondylar muscles. It is thought to result from overuse of the extensor carpi radialis brevis (ECRB) muscle by repetitive micro trauma resulting in a primary tendinosis of the ECRB, with or without involvement of the extensor digitorum communis (EDC). Epicondylitis is a condition described by intermittent pain at the muscle-tendon junction or at insertion points of the wrist extensors (lateral epicondylitis) in the elbow region.<sup>1</sup> The clinical features of epicondylitis are described as complaint of pain as the primary symptom, generally localized around the lateral epicondyle but sometimes radiating up in arm and distally to the forearm and the movements of wrist and hand aggravates the symptoms. It is one of the most prevalent disorder of the arm region.<sup>2</sup>

Tennis elbow is one of the musculoskeletal conditions troubles an adulthood with pain and disability.<sup>3</sup> Epicondylitis causes pain and functional impairment and reduces productivity. It produces a heavy economic burden as lost workdays and, in some patients, inability to work may last for several weeks.<sup>4,5</sup> There is evidence of an association of epicondylitis with forceful work tasks, a combination of forceful and repetitive activities of the upper extremity, and a combination of either forceful or repetitive activities and extreme nonneutral postures of the hands and arms.<sup>4,6,7</sup> It should be remembered that only 5% of people suffering from tennis elbow relate the injury to tennis! Contractile overloads that chronically stress the tendon near the attachment on the humerus are the primary cause of LET. It occurs often in repetitive upper extremity activities such as computer use, heavy lifting, forceful forearm pronation and supination, and repetitive vibration. Despite the name, you will also commonly see this chronic condition in other sports such as squash, badminton, baseball, swimming and field throwing events.

People with repetitive one-sided movements in their jobs such as electricians, carpenters, gardeners, Household women, desk bound jobs also commonly present with this condition. Epicondylitis occurs commonly in working populations<sup>7,8</sup> An association between gender and epicondylitis is still controversial. A higher risk has been reported in women than in men by some studies<sup>7,10</sup> This injury is often work-related, any activity involving wrist extension, pronation or supination during manual labour, housework and hobbies are considered as important causal factors.<sup>12</sup> LET is equally common in both sexes. 11 the ages of 30-50 years the disease is most

prevalent. Obtaining the condition at both lateral epicondyles is rare, the dominant arm has the greatest chance of the occurrence of LET. Twenty percent of cases persist for more than a year.<sup>13</sup> A systematic review identified 3 risk factors: handling tools heavier than 1 kg, handling loads heavier than 20 kg at least 10 times per day, and repetitive movements for more than 2 hours per day. Other risk factors are overuse, repetitive movements, training errors, misalignments, flexibility problems, ageing, poor circulation, strength deficits or muscle imbalance and psychological factors.<sup>14</sup> Most of the previous studies of epicondylitis have been conducted among small and selected occupational populations. Few studies have reported the prevalence and determinants of lateral and medial epicondylitis in the general population.<sup>11</sup> The validation study on finding the diagnostic accuracy of provocative tests in lateral epicondylitis highlighted that Cozen's test and Maudsley test are better tests for ruling out lateral epicondylitis whereas Mills test is an excellent diagnostic test for ruling in lateral epicondylitis.

The test results of the three provocative tests with ultrasonographic findings were analyzed. The sensitivity for Cozen's test, Maudsley test and Mills test was found to be 84%, 88% and 53% respectively. The specificity for Cozen's Maudsley and Mills test was found to be 0%, 0% and 100% respectively. Mills test showed significant area under receiver operator curve (ROC) i.e. (0.769), which explains that the test has good diagnostic accuracy. This validation study, concludes that Mills test has an excellent diagnostic value for ruling in LE.<sup>15</sup> Sensitivity (%) Specificity (%) Positive Likelihood Negative Likelihood 53 100 ~ (infinity) 0.47.

Formerly known as the Patient-Rated Forearm Evaluation Questionnaire (PRFEQ), the PRTEE was developed so that tennis elbow braces could be evaluated for a master's project. The PRTEE was based on the Patient-Rated Wrist Evaluation (PRWE) and also incorporated information from a previous study that evaluated the psychometric properties of outcome measures for patients with lateral epicondylitis. The PRTEE was a reliable, reproducible, and sensitive instrument for assessment of chronic lateral elbow tendinopathy in a tennis playing cohort. It was at least as sensitive to change as the other outcome tools tested. The PRTEE may become the standard primary outcome measure in research of tennis elbow.<sup>16</sup>

Most of the times the women tend to ignore their pain and disability to work in certain positions, household women usually perform various types of activities that include repetitive movement of wrist such as, cooking, laundry, carrying weights, etc. So, this study is conducted to find prevalence of tennis elbow and related pain and disability among household women.

## METHODOLOGY

A cross sectional study was conducted by simple random sampling in Jalgaon city among 100 household women. Mills test was performed to diagnose tennis elbow and the positive participants were assessed for pain and disability using PRTEE questionnaire. The responses were collected from the participants and the results were calculated. The Inclusion criteria for the study was Household Women, Age 20-60 years, Women who work minimum 4-5 hours a day and the Exclusion criteria for the study was any kind of Neurological disorders, Cervical radiculopathy, Trauma, Fracture of upper extremity, Hand deformities.

## PROCEDURE

The permission was taken from the institutional ethical committee. Further subjects were selected on the basis of inclusion and exclusion criteria, then written and informed consent was taken and nature of study was explained to the participants, total number of 100 household women were tested for tennis elbow through mills test and the positive ones were asked to fill out PRTEE Questionnaire to assess pain and disability.

## OUTCOME MEASURES

**MILLS TEST** The Patient is seated and the clinician palpates the patient's lateral epicondyle with one hand while pronating the patient's forearm, fully flexing the wrist, the elbow extended. A production of pain in the area of the insertion at the lateral epicondyle indicates a positive test.<sup>10</sup>



FIG:1



FIG:2

**PRTEEQ** The PRTEE, formerly known as the Patient-Rated Forearm Evaluation Questionnaire (PRFEQ), is a 15-item questionnaire designed to measure forearm pain and disability in patients with lateral epicondylitis. The PRTEE allows patients to rate their levels of tennis elbow pain and disability from 0 to 10, and consists of 2 subscales: 1) PAIN subscale includes- 5 items 2) FUNCTION subscale includes Specific activities - 6 items, Usual activities - 4 items In addition to the individual subscale scores, a total score can be computed on a scale of 100 (0 = no disability), where pain and functional problems are weighted equal.

**Interpretation** The total PRTEE score rates pain and disability equally. Higher score indicates more pain and functional disability.<sup>13</sup>

**SATISTICAL ANALYSIS**

The collected data was managed & subjected to basic descriptive statistics in MS-Excel. A total number of 100 Household women were tested for tennis elbow through mills test and the positive ones were asked to fill out PRTEE questionnaire. Response to questions were determined and presented in tabular and graphic formats

**RESULTS**

Characteristics of Participants are as follows

**AGE DISTRIBUTION:**

AGE	NO OF PARTICIPANTS	PERCENTAGE
20 – 30	25	25%
31 – 40	34	34%
41 – 50	26	26%
51 – 60	15	15%

INTERPRETATION: In the above table the age distribution of women between 20-30 is 25%, 31-40 is 34%, 41-50 is 26%, 51 -60 is 15%.

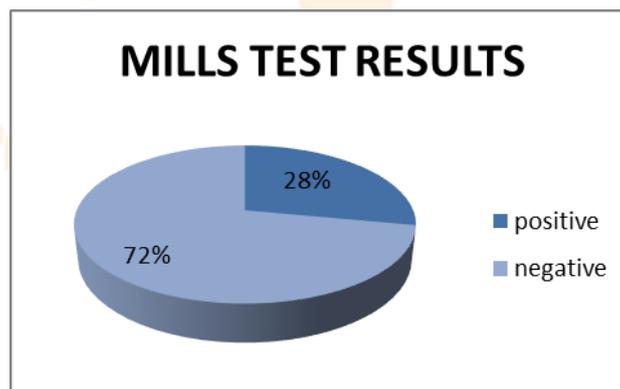
**DOMINANCE:**

DOMINANCE	NO OF PARTICIPANTS	PERCENTAGE
RIGHT	87	87%
LEFT	13	13%

INTERPRETATION: In the above table the dominance of women for right is 87% and left is 13%.

**MILLS TEST:**

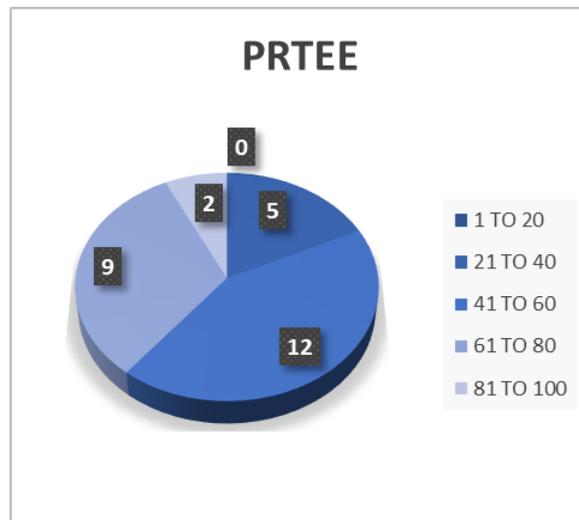
MILLS TEST	NO OF PARTICIPANTS	PERCENTAGE
POSITIVE	28	28%
NEGATIVE	72	72%



INTERPRETATION: The above table and pie chart shows results for mills test for which positive is 28% and negative is 72%.

**PRTEE:**

PRTEE (100)	NO OF PARTICIPANTS	PERCENTAGE
1-20	0	0%
21-40	5	18%
41-60	12	43%
61-80	9	32%
81-100	2	7%



**INTERPRETATION:** The above table and pie chart shows the results of PRTEE scale where pain and disability are charted from 1-100 score as 1-20 have 0%, 21-40 have 18%, 41-60 have 43%, 61-80 have 32%, 81-100 have 7%. Also, 7% of total women have the highest pain and disability. And 43% that is majority of women have pain and disability between 41-60.

## DISCUSSION

The present study aimed to find out the Prevalence of Tennis Elbow and related pain and disability among Household Women. The results of this study demonstrated that 28% of women were tested positive for LE. The majority of women in this study were between 31-40 years of age and rest were 50 and above. About 87% of women were with Right dominance and 13% were of left dominance. This result might be because of the overuse of the wrist extensors in daily activity of household women such as cooking, laundry, cleaning etc. A similar study conducted by Rahman Shiri, et al.<sup>3,4</sup>. This study said that the prevalence of lateral epicondylitis in the population is approximately 1.0-1.3% in men and 1.1-4.0% in women. The incidence rate of medical consultations has been estimated at 0.3-1.1 for lateral per year per 100 subjects of general practice populations. Risk factors for LE are forceful activities, high force combined with high repetition or awkward posture and awkward postures are associated with epicondylitis. A Similar study conducted by Lennart Dimbarg,<sup>10</sup> on prevalence of tennis elbow in a population of workers in an engineering industry. In this study the prevalence of this condition and its relationship to some work factors was investigated in 540 workers in a modern engineering industry. The prevalence was 7.4% (40/540).

As in the current study severe pain was recorded among 25% of the women and severe disability was recorded among 6% of women. Any kind of physical injury to the body has its own psychological effects, lateral epicondylitis is no less it has its own disadvantages on psychology as a study by Aurelie Aben et al.,<sup>9</sup> investigated in their study patients with tennis elbow have a different psychological profile compared with healthy controls. However, work satisfaction was relatively high in both groups. The results suggest that there is a relationship between complaints related to tennis elbow and psychological characteristics. Similarly in the current study the results of PRTEE scale show the disability of household women on daily basis. 7% of all 28 women have disability index of over 80 which is severe disability, hence the current study shows that tennis elbow has effects on pain and function of the affected elbow which may definitely cause lifestyle changes.

Tennis elbow is also known for affecting quality of life a similar article by Pradeepika Samagh, et al.<sup>6</sup> had a study on the impact of lateral epicondylitis on quality of life. The study was conducted to study the impact of Lateral epicondylitis on quality of life. A significant positive correlation was found between pain and functional disability and quality of life. This suggests that with an increase in severity of pain there is increase in functional disability with lower QOL both physically and mentally.

In the present study the prevalence of tennis elbow among household women is thus found 28% and the 32% women had pain between 31-40 and 22 women had disability rating from 10-30 respectively. Which compares that 28% women are tend to affect their quality of life due to lateral epicondylitis and related pain and disability. A proposed explanation for this would be that the pain occurring in lateral epicondylitis is related to activities of daily living such as gripping, shaking hands, lifting a kettle etc. This suggests that most of the subjects had moderate disability which might be due to a positive correlation between pain severity and reduced muscle strength. A decrease in strength with an increase in pain results into functional disability. This is supported by Flatt et al.<sup>14</sup> who reported that the movements which get restricted due to pain in lateral epicondylitis hinder the activities of daily living which ultimately lead to reduced functional ability.<sup>14</sup>

## CONCLUSION

The present study concluded that 28% household women are prevalent for tennis elbow. Out of the positive women 7% of total women have the severe pain and disability. And 43% that is majority of women have moderate pain and disability.

## LIMITATIONS

- The study was limited to Jalgaon district only.
- Sample population was restricted.

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