

SCREENING OF LATERAL EPICONDYLITIS IN SWEEPERS USING PATIENT RATED TENNIS ELBOW EVALUATION QUESTIONNAIRE

SCREENING PRIVIND PREZENȚA EPICONDILITEI LATERALE LA MĂTURĂTORI FOLOSIND CHESTIONARUL DE EVALUARE "PATIENT RATED TENNIS ELBOW"

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Key words: tennis elbow, Patient rated tennis elbow evaluation questionnaire (PRTEE questionnaire), Sweepers, Cozen's test, Mill's test, Maudsley's test.

Abstract

Background. Pain over the lateral epicondyle, which is exacerbated by work or recreational activities that involve gripping action of the hand, such as holding tools, shaking hands usually signals that the individual has a condition termed lateral epicondylagia, epicondylitis, or what is more commonly known as tennis elbow.

Objective. To determine the prevalence of lateral epicondylitis in sweepers of K.L.E. University campus using Patient Rated Tennis Elbow Evaluation Questionnaire.

Methods. 215 sweepers consisting of both males and females all above the age of 18 years participated in this study. All these subjects were from the K.L.E University campus. Subject having any discomfort or pain at lateral epicondyle based on the PRTEE questionnaire were further evaluated for lateral epicondylitis using diagnostic tests like Cozens test, Mills test and Maudsley's test. Any one of the following test being positive the subjects were confirmed of lateral epicondylitis. The PRTEE questionnaire scores were calculated and the statistical analysis was done.

Results. Results of this study showed, that around 27 subjects out of 215 subjects participated in the study had positive lateral epicondylitis. Among these, all 27 were females and no males had positive lateral epicondylitis. Duration of symptoms was statistically significant for lateral epicondylitis with $p < 0.0001$.

Conclusion. This study concludes that the prevalence of lateral epicondylitis in sweepers is 12.55%, and there is correlation between duration of symptoms and presence of lateral epicondylitis using PRTEE questionnaire but there is no correlation between age, sex, BMI, working period, working hours for lateral epicondylitis.

Cuvinte cheie: cotul tenismenului, chestionar de evaluare "Patient rated tennis elbow" (PRTEE questionnaire), măturători, testul Cozen, testul Mill, testul Maudsley.

Rezumat

Introducere. Durerea resimțită la nivelul epicondilului lateral, exacerbată de muncă sau activități recreaționale care presupun prehensiune, ca de exemplu apucarea unei unelte, scuturatul mâinii, este un simptom al unei afecțiuni denumită epicondialgie laterală, epicondilită sau într-o denumire mai populară cotul tenismenului.

Obiective. Determinarea prevalenței epicondilitatei laterale la măturătorii din Universitatea K.L.E. folosind Chestionarul de evaluare "Patient Rated Tennis Elbow".

Material și metodă. 215 măturători din Universitatea KLE, atât bărbați cât și femei, media de vârstă de 18 ani, au participat la studiu. Subiecții care prezentau orice disconfort sau durere la nivelul epicondilului lateral, pe baza chestionarului PRTEE, au fost mai apoi evaluate pentru prezența epicondilitatei laterale folosind testele de diagnostic Cozens, Mills și Maudsley. Subiecții cu rezultate pozitive la aceste teste au avut confirmarea diagnosticului de epicondilită laterală. Scorurile chestionarului PRTEE au fost calculate și analizate statistic.

Rezultate. Rezultatele studiului au demonstrat că aproximativ 27 de subiecți din 215 participanți la studiu prezentau epicondilită laterală. Toți subiecții diagnosticați au fost femei. Durata simptomelor a fost semnificativă statistic pentru epicondilită laterală $p < 0.0001$.

Concluzii. În concluzie, prevalența epicondilitatei laterale la măturători este de 12.55%, și există corelații între durata simptomelor și prezența epicondilitatei, folosind chestionarul PRTEE, dar nu există o corelație semnificativă între vârstă, gen, IMC, perioada de muncă, orele de muncă și epicondilita laterală.

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Introduction

Pain over the lateral epicondyle, which is exacerbated by work or recreational activities that involve gripping action of the hand, such as holding tools, shaking hands and lifting a kettle, usually signals that the individual has a condition termed lateral epicondylalgia, epicondylitis, or what is more commonly known as tennis elbow.[1]

Lateral epicondylitis affects 1-3% of the population, only 5% of all patients seen are recreational tennis players.[2] Although the syndrome has been identified in patients ranging from 20-60 years old, it predominantly occurs in the fourth and fifth decades. Male and female prevalence rates are reportedly equal.[3-5]

A study on lateral epicondylitis emphasized that the strength of association between combined physical exertion and elbow movements and lateral epicondylitis age, BMI and low social support (only for men) was significant risk factors. Hard perceived physical exertion combined with elbow flexion-extension (>2hrs /day) and is bending more than >2hrs/day was a strong significant risk factor for elbow pain and epicondylitis.[6] A systematic review of literature conducted on the association between type of work, physical load and psychological aspects of work and the occurrence of specific elbow disorders concluded that handling tools >1kgs, handling loads >20kgs at least 10 times per day and repetitive movement >2hrs per day were associated with lateral epicondylitis.[7]

Patient Rated Tennis Elbow Evaluation Questionnaire which is an updated version of the patient rated forearm evaluation questionnaire (PRFEQ), is a 15 item questionnaire specifically designed for patients with lateral elbow tendinopathy (LET).[8]

Repetitive flexion- extension, pronation- supination and twisting movements of the forearm are incorporated by the sweepers in their daily activities which are prone for developing lateral epicondylitis.

There are various studies done on subjects with different occupation for e.g, industrial workers, vibratory tool users, dentists, heavy manual workers etc. for the screening of lateral epicondylitis using PRTEE questionnaire. But to the best of our knowledge no study has been done for the screening of lateral epicondylitis in sweepers. Hence, this study intends to evaluate the prevalence of lateral epicondylitis in subjects like sweepers using a PRTEE questionnaire.

Materials and methods

Study design was an observational type which consisted of non probability convenient sampling. A total of 215 sweepers participated in this study. All these subjects were from the K.L.E University campus, Belgaum, Karnataka. The study sample consisted of both males and females all above the age of 18 years. The subjects were excluded if they had any trauma to the upper limb or if they had taken any medical treatment for the same in the past 3 months and if they were psychologically ill.

An approval was obtained from the institutional ethical committee for the study. It was followed by a written informed consent and a relevant demographic data that was obtained from these subjects. All these subjects were explained in detail about the questions in the PRTEE questionnaire in their local language (Kannada, Marathi, Hindi) and the scoring of each question was explained to the subjects. Any subject having any discomfort or pain at the area of lateral epicondyle based on the PRTEE questionnaire were further diagnosed for positive lateral epicondylitis using diagnostic tests like Cozens test, Mills test and Maudsley's test. Any 1 of the diagnostic test being positive the subject was diagnosed of positive lateral epicondylitis.

Procedure

According to a study done by Ashish JP on lateral epicondylitis Cozens, Mill's and Maudsley's test were used to diagnose patients with positive lateral epicondylitis. [9]

1. Cozens test: Subject is asked to make a fist, pronate the forearm and radially deviate and extend the wrist while the examiner resists the movement. A severe pain is reproduced at the lateral epicondyle is a positive sign.

2. Mill’s test: With this test pain occurs over the lateral epicondyle when the wrist and fingers are completely flexed while the examiner passively extends the elbow.

3. Maudsley’s test: The patient may feel pain on the resisted extension of the middle finger at the MCP joint when the elbow is fully extended.



Fig. 1- Cozens test



Fig. 2-Mill’s test



Fig. 3- Maudsley’s test

The total score of the PRTEE questionnaire was evaluated and the prevalence of lateral epicondylitis in these sweepers was determined.

Results

Statistical analysis for the present study was done naturally as well as using MINITAB software so as to verify the results obtained. Various statistical measures such as mean, standard deviation and regression analysis was done. Test of significance namely ANOVA was used.

Level of significance was set at P<0.05.

Among the 215 subjects screened for lateral epicondylitis using PRTEE questionnaire the prevalence found was 12.55%.

$$\begin{aligned} \text{Prevalence} &= 27/215 \times 100 \\ &= 12.55\% \end{aligned}$$

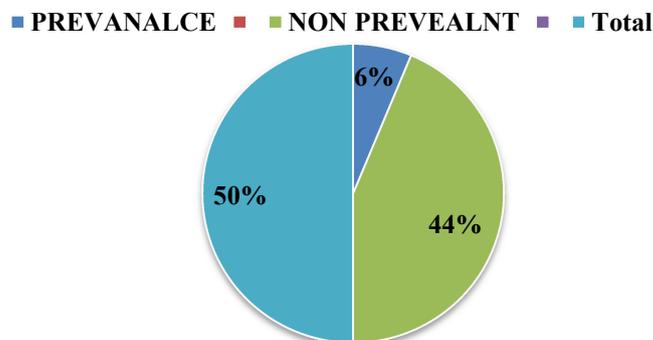


Figure 1:Prevalence of lateral epicondylitis in sweepers

Age:

Age of all the subjects in the study is above 18 years. The mean age of the female subjects was 37.2±10.24 years and the mean age of the male subjects was 33.5±10.67 years. The range for females was 18-43 years and for males was 19-51 years. According to the analysis age is not significant (p=0.878).(Table 1, figure 2)

Table 1:Relation of age on lateral epicondylitis

	Total subjects	Mean and SD (years)	Range	p value
Females	192	37.2 ± 10.24	18-83 years	0.878
Males	23	33.5 ±10.67	19-51 years	
Total	215	36.8 ±10.33	18-83 years	

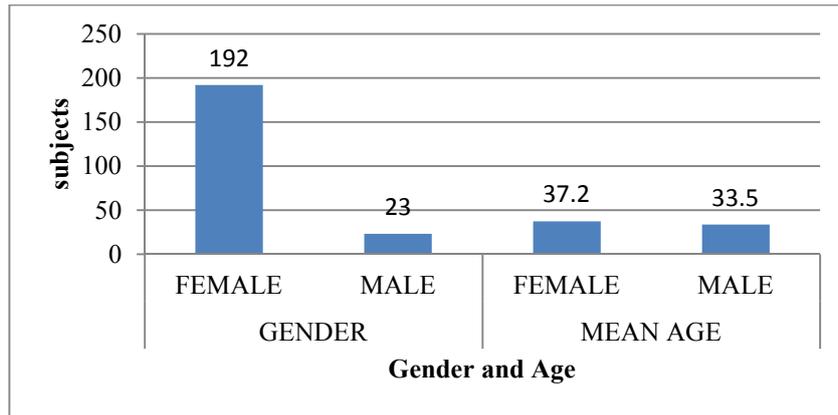


Figure 2: Gender and Age

Gender:

The gender ratio in this study was 192:23 i.e 192 females and 23 males. Out of 192 females included in the study, 27 females showed presence of lateral epicondylitis and out of 23 males, none were positive. According to this analysis, sex does not have any significance. (p=0.311).(Table 2)

Table 2:Relation of sex on lateral epicondylitis

	Positive	Negative	p value
Females (192)	27	165	0.311
Males (23)	0	23	

Height:

The mean value of height of all subjects was 1.52±0.04. According to the analysis done height of all subjects was not statistically significant. (p=0.669)

Weight:

The mean value of weight of all subjects was 50.37±9.25. According to the analysis done weight of all subjects was not statistically significant. (p=0.912)

BMI:

The mean value of BMI of all the subjects is 21.79 ±3.37. According to the analysis done BMI of all subjects was not statistically significant. (p=0.611)

Working period:

The mean value of working years of all the subjects is 2008.2±2054.4. According to the analysis done working years of all subjects was not statistically significant. (p=0.303) (Table 3, figure 3)

Table 3:Relation of working period (years) on lateral epicondylitis

No. Of years	No	Yes	Total	P value
< or equal to 1yr	46	10	56	0.303
1-5 years	76	7	83	
More than 5 years	66	10	76	
	188	27	215	

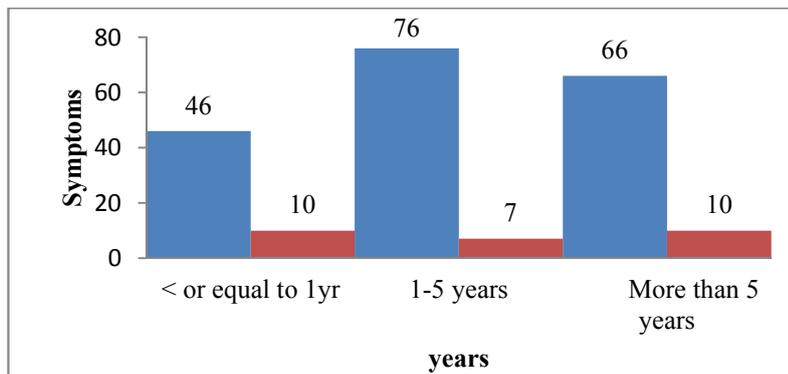


Figure 3: Relation of Working period and symptoms.

Working hours:

The mean value of working hours of the sweepers of all the subjects is 7.98 ± 1.36 . According to the analysis done working hours of all subjects was not statistically significant. ($p=0.509$). (Table 4, Figure 4)

Table 4: Relation of working hours on lateral epicondylitis

No. of working hours	Symptoms			p value
	No	Yes	Total	
2	3	1	4	0.509
2.5	2	1	3	
3	1	0	1	
5	1	0	1	
6	3	1	4	
7	0	1	1	
8	172	17	0	
10	2	1	1	
12	4	5	9	
Total subjects	188	27	215	

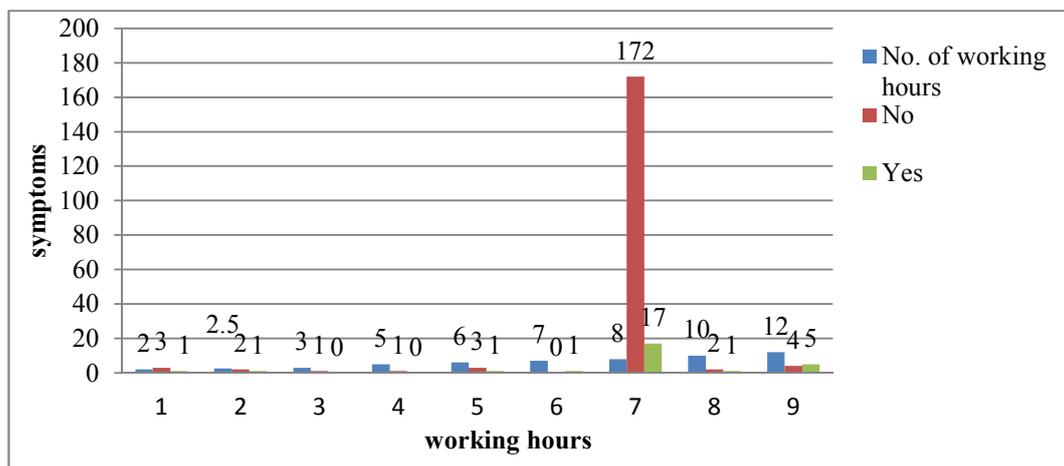


Figure 4: Relation of symptoms and working hours

Discussion

Subjects of the present study consist of 192 females and 23 males out of which 27 females were positive and no males were positive for lateral epicondylitis. In this study females had a higher prevalence rate than in men, but there was no statistically significant difference between men and women prevalence. This study correlates to a study done by Alireza Shomsoddine and few others, where tennis elbow is equally distributed between men and women.[10]

According to this study 12.55% of the sweepers had a positive lateral epicondylitis due to their bending- straightening movement of the elbow .The range for positive lateral epicondylitis

was 18-83 years. A cross sectional study done on 9696 randomly selected adults aged 25-64 years undergoing a screening questionnaire and a standardized physical examination reported 11% of the elbow pain in the past 1 week in which 0.7% was diagnosed with lateral epicondylitis.[11]

As in most studies, musculoskeletal disorders were more prevalent among the females than in males. Interestingly, though, a study done by Catarene Nordander, Kerstina Ohesson et al. the prevalence ratio for repetitive/constrained work versus varied/mobile work was foremost measures approximately the same for both the genders. Females and males showed similar risk elevations. In the present study, it was reported that sex does not differ significantly and around 12.55% of sweepers among the 215 in total had a prevalence of lateral epicondylitis due to their repetitive flexion/extension movements.[12]

A study done by A.G. Titchener and others concluded that risk factors like obesity are not associated with lateral epicondylitis. From this study it can be inferred that, height, weight, BMI had no relative significance for lateral epicondylitis.[13]

In a study done by Helenice Jane Cote Gil Cousy and others it was found that the evidence of work related musculoskeletal disorders (WRMD) is high in workers doing highly repetitive movements. The analysis interpreted that the symptoms were primarily influenced by the work done. Symptoms were secondarily influenced by gender, job tenure and age. When compared within the same job tenure there was no significant difference in symptoms between male and female workers. According to the results of this study sex does not differ significantly, whereas, duration of symptoms differs significantly.[14]

PRTEE formerly known as the patient-rated forearm evaluation questionnaire (PRFEQ) seems to be a reliable tool for assessing pain and function in patients with chronic lateral epicondylitis. The PRTEE has shown greater reliability and has sufficient width scale to reliably detect improvement or worsening in most subjects. For these reasons, the PRTEE questionnaire appears to be the one of the most commonly reported measure of health status in patients with lateral epicondylitis.[15]

Future studies are recommended with a larger sample size of sweepers in a larger sampling area. Ergonomic advice could be given for the sweepers to avoid work related musculoskeletal disorders.

Conclusion

Present study concludes that the prevalence of lateral epicondylitis in sweepers is 12.55%, and there is correlation between duration of symptoms and presence of lateral epicondylitis using PRTEE questionnaire but there is no correlation between age, sex, BMI, working period, working hours for lateral epicondylitis.

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