Prevalence of tennis elbow in Badminton players

Adeel Khalid*, Nida Waqas, Fizza Zulfiqar

* DPT student, University Institute of Physical Therapy, Faculty of Allied Health Sciences, University of Lahore, Lahore, Pakistan.
E-MAIL: adeelkhalid900@gmail.com

b DPT student, University Institute of Physical Therapy, Faculty of Allied Health Sciences, University of Lahore, Lahore, Pakistan.
E-MAIL: nidowaqas@gmail.com

c DPT student, University Institute of Physical Therapy, Faculty of Allied Health Sciences, University of Lahore, Lahore, Pakistan.
E-MAIL: fizzazulfiqar55@gmail.com

Abstract

Background: Tennis elbow or lateral epicondylitis is a condition in which the outer part of the elbow at the lateral epicondyl is throated and tendered. The forearm muscles and tendons are repeatedly damaged overuse. This leads to pain and sensitivity outside the elbow.

Objective: The main objective of this study was to found the prevalence of tennis elbow in badminton players in Lahore badminton club and badminton players in University of Lahore.

Methodology: Cross Sectional study was conducted. Sample was chosen using convenient sampling technique. 150 subjects were involved in this study. “Visual Analogue Scale (VAS) was used to check the intensity of elbow pain” and questionnaire was used for data collection.

Results: 76% respondents said that they did not felt pain in Arm and Wrist remaining 23.3% said they had pain. 83% respondents said that they did not felt stiffness when they play badminton and remaining 16.7% said they felt stiffness. These two factors were used to check the prevalence of tennis elbow in badminton players. Here 111(74%) respondents said that they did not felt pain while playing badminton. The other 39(26%) respondents said that they felt pain while they playing badminton.

Conclusion: In this study respondents, which had pain, not only pain in arm and wrist but also felt stiffness, prevalence of tennis elbow is 23.3% while playing badminton. There were multiple factors diagnosed to enhance the pain and stiffness in this study. Most important were the respondents can play 4 to 5 hours in one day and closer to 30 age. These are the main factors with enhance pain in arm and wrist and stiffness.

Key words: Tennis Elbow; Prevalence; Intensity of Pain; Stiffness; Badminton Players.

Introduction:

Tennis elbow and lateral epicondylitis is one of the most common overuse injuries in tennis, particularly in the recreational player. It is a tendinopathy which involves extensor carpi radialis brevis (De Smedt, de Jong et al. 2007). Tennis elbow or lateral epicondylitis is a condition in which the outer part of the elbow at the lateral epicondyl is throated and tendered. The forearm muscles and tendons are repeatedly damaged overuse. This leads to pain and sensitivity outside the elbow (Barrell, Cooper et al. 1981).

Any activity that requires repeated use of forearm extensor muscles, including playing tennis, may cause acute or chronic tendinitis of tendinous placement of these muscles in the lateral epicondyle of the elbow (Stewart 1981). The situation is common in workers and carpenters turning prematurely with a hammer or other tool, and is similar to a golfer's elbow and affects the medial epicondyle inside the elbow. Continuation of activity after the onset of the condition and avoidance of forced rest may cause permanent pain and can only be treated surgically (Fahlström, Björnstig et al. 1998, Fukuda, Fujioka et al. 2008).

These are major symptoms, pain on the outside of the elbow (lateral epicondyle), tenderness at the lateral epicondyle, a distinct part of the bicep outside the dorsi flexion (Muramatsu and Kuriyama 2005), pain due to wrist grip and movement, wrist extension (e.g turning the screwdriver) and lifting movements (Parsons, Goldblatt et al. 2005). Symptoms of tennis elbow include but are not limited to: pain from the forearm and ankle outside the elbow, stretching of the wrist pain, weakness of the forearm, shaking the hand or throwing a torch to a door knocker, painful grip and relegation of relatively heavy items. The pain is similar to what is known as a golfer's elbow, but the second is seen in the medial aspect of the elbow (Rolison IV and Smoot 2017). Tennis elbow is a type of recurrent stretch injuries resulting from tendon overuse and failure of the tendon to heal. In addition, the extensor carpi radialis brevis plays an important role in tennis elbow (Göktürk, Vardareli et al. 1995, Bespalchuk, Okada et al. 2004). Histological studies have shown that this is a consequence of tendon degeneration that changes with the regulation of normal tissue...
collagen collagen. For this reason, the disorder is often referred to as tendinitis or tendinopathy (Apriantono, Kusnaedi et al. 2007). When it comes to talent, poor technique increases the chances of injury like any sport. For this reason, the individual should learn the appropriate technique for every aspect of the sport (Kelly 1987, Fahlström, Björnstig et al. 1998). The competitive level of the sportsman also affects the incidence of tennis elbow. Class A and B players are significantly higher than class C and novice players in tennis elbow formation. However, there is an opposite but statistically insignificant trend for the relapse of previous events, while the level of skill declines gradually (Chandran 1974, Kennerley-Bankes 1985, Jones 1987). The main objective of this study was to find the prevalence of tennis elbow in badminton players in Lahore badminton club and badminton players in University of Lahore.

**Methodology:**
A cross-sectional study was conducted from September 2017 to February 2018. The total sample size was 150 collected by using \( n = \frac{z^2_{1-\alpha/2} \cdot p(1-p)}{d^2} \) formula. Both males and females, individuals above 20 and below 30 years old and badminton players were included while older adults, children and individuals who have any impairment were under exclusion criteria. Visual Analogue Scale (VAS) (Gettens and Fulbrook 2015) was used to assess intensity of pain. Descriptive statistics focused on bar chart, pie chart and histogram. Data was collected from Badminton sports clubs and University of Lahore. All the data which was used in the present study were collected from primary resources by questionnaires. Convenient sample technique was used. Permission was taken in the form of consent form.

**Results:**
In this study questionnaire was filled by one hundred and fifty individuals. The mean age of the respondents was 23 years. Question were asked about testing of prevalence of tennis elbow by pain, stiffness in arm and wrist, intensity of pain and pain while playing badminton. Surprisingly 35(23.3%) respondents said that they felt pain in arm and wrist and 115(76.6%) did not felt pain (Table-I). Here 25(16.7%) respondents said that they felt stiffness when they play badminton. The mean value of this variable was 0.17. The minimum Value was 0 and maximum was 1 (Table-II).

<table>
<thead>
<tr>
<th>Table-I</th>
<th>Descriptive statistics showing prevalence of Pain in Arm and Wrist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>No Pain</td>
<td>115</td>
</tr>
<tr>
<td>Have pain</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
</tr>
</tbody>
</table>

Out of 150 respondents, 115(76.6%) did not felt pain while 35(23.3%) felt pain in arm and wrist.

**Table-II:**
Descriptive statistics showing stiffness in Arm and Wrist

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No stiffness</td>
<td>125</td>
<td>83.3</td>
</tr>
<tr>
<td>Have stiffness</td>
<td>25</td>
<td>16.7</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>100.0</td>
</tr>
</tbody>
</table>

125(83.3%) showed no stiffness while 25(16.7%) felt stiffness in arm and wrist, out of 150 respondents.

**Figure-I**
Graphical representation of intensity of pain.

<table>
<thead>
<tr>
<th>Intensity of Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Pain</td>
</tr>
<tr>
<td>14</td>
</tr>
</tbody>
</table>

14 out of 150 respondents faced mild pain, other 18 individuals faced average pain and remaining 3 said that they faced high pain.
Table-III: Descriptive statistics showing testing of pain while playing badminton

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Pain</td>
<td>111</td>
<td>74.0</td>
</tr>
<tr>
<td>Have pain</td>
<td>39</td>
<td>26.0</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Here 111(74%) respondents said that they did not felt pain while playing badminton. The other 39(26%) respondents said that they felt pain while they playing badminton.

DISCUSSION:

Tennis elbow and lateral epicondylitis is one of the most common overuse injuries in tennis, particularly in the recreational player. It is a tendinopathy which involves extensor carpi radialis brevis (De Smedt, de Jong et al. 2007). Estimates of 50% elbow injury for athletes using overhead arm motions have been suggested (Field and Altchek 1995).

The diagnosis of epicondylitis or tennis elbow was based on self-reported symptoms in the interview. Diagnostic criteria for tennis elbow were pain at elbow during last preceding 30 days and pain at lateral humeral epicondyle region on resisted extension of wrist with elbow extended and tenderness at lateral humeral epicondyle (Leclerc, Landre et al. 2001).

In this study, the mean age of the respondents was 23 years. Questions were asked about testing of prevalence of tennis elbow by pain, stiffness in arm and wrist, intensity of pain and pain while playing badminton. 35(23.3%) respondents said that they felt pain in arm and wrist. Here 25(16.7%) respondents said that they felt stiffness when they play badminton. Here 111(74%) respondents said that they did not felt pain while playing badminton. The other 39(26%) respondents said that they felt pain while they playing badminton.

In a study, it was reported that elbow injuries were the 2nd most affected area of upper extremity injuries. The commonest elbow injuries diagnosed were golfer’s elbow (54.2%) and tennis elbow (12.5%) (AA 2009) which shows a low prevalence than recent study.

A population study was conducted and reported the prevalence of lateral epicondylitis in 4783 Finnish tennis players of all levels. The prevalence of definite lateral epicondylitis was found 1.3% with no difference between men and women. They also reported an association between tennis elbow and work demanding repetitive movements of arms (Shiri, Viikari-Juntura et al. 2006).

It has been reported that 50% of tennis players will suffer injury at some point in their career (Maylack 1988).

In 1974, Nirschl reported a 35% incidence among world class tennis athletes. He also interviewed one hundred seventeen intermediate club players by random sample at two tennis clubs and a tennis pro shop. Twenty female and Ninety-one were male with an average age of forty-one years. Sixty-one players (52.13%) were noted to have symptoms of tennis elbow for longer than three months (Nirschl 1974) which shows higher prevalence than recent study.

In another study, epidemiology of Badminton injuries were studied and reported that 25% (17/69) of those were tennis elbows (Jørgensen and Winge 1987) which supported recent study.

In another study, Gruchow et al. found a prevalence of 14.1% in over 500 tennis playing subjects aged 20-50 years old (Gruchow and Pelletier 1979). Recent study shows higher prevalence than this study.

The overall incidence of lateral epicondylitis has been reported to be anywhere from 35% to 51% (Abrams, Renstrom et al. 2012) which supported the results of recent study.

Seventy four local league tennis players were surveyed through a questionnaire and interview to establish the incidence of tennis elbow, the perceived causes, preventive measures taken and their perceived effectiveness. Of these 35% suffered from tennis elbow, 77% of those regarded as critical injury and for the reminder very serious (Carroll 1981) which shows a higher prevalence than recent study.

Conclusion

In this research the researcher checked the prevalence of tennis elbow in badminton players. According to results 76% respondents said that they did not felt pain in Arm and Wrist remaining 23.3% said they had pain. 83% respondents said that they did not felt stiffness when they play badminton and remaining 16.7% said they felt stiffness. These two factors were used to check the prevalence of tennis elbow in badminton players. Here 111(74%) respondents said that they did not felt pain while playing badminton. The other 39(26%) respondents said that they felt pain while they playing badminton.

There were multiple factors diagnosed to enhance the pain and stiffness in this study. Most important were the respondents can play 4 to 5 hours in one day and closer to 30 age. These are the main factors.
with enhanced pain in arm and wrist and stiffness. Only these respondents could not carry heavy objects and due to these factors their daily life also affect heavily.

References