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Original Research Article

Functional Outcome of Lateral Epicondylitis Patients After Physiotherapy Interventions- A Pretest & Posttest Study From Bangladesh

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Abstract

Background: Patients suffering from Lateral Epicondylitis experience restriction in their daily activities due to the pain and dysfunction. Though the condition does not lead to disability, it limits functionality. The condition can be treated effectively in a primary health care environment. ***Objective:*** The objective of the study was to find out the functional outcome of lateral epicondylitis patients after 6 weeks of physiotherapy interventions. ***Methodology:*** A quantitative quasi-experimental study design was chosen for this study. A total of 18 participants were selected by hospital based convenient sampling technique and by the inclusion and exclusion criteria. Patients received treatment sessions for 18 sessions within the study period. The assessment was done again on a post-test on the same group using the same scales and the changes between pre and post-test of the same groups were compared. Pain and dysfunction were measured by Numerical Pain Rating Scale (NPRS) and Patient Rated Tennis Elbow Evaluation (PRTEE). ***Result:*** The result shows significant reduction of pain between baseline assessment and posttest. Overall pain in affected arm shows (p=0.001), specific activities (p=0.000) and usual activities (p=0.000). Distribution of pain during pretest found 6 (30%), specific activities 4 (20%) and in usual activities 3(17%) which was comparatively reduced after 6 months physiotherapy treatment found in posttest distribution was in affected arm 1 (2%), specific and usual activities was same in each 2 (9%) which proved that the physiotherapy treatment was more effective for reduction of pain of the Lateral Epicondylities. ***Conclusion:*** After 6 weeks of physiotherapy interventions, patient showed better outcome of the treatment and better recovery from Lateral Epicondylitis. So, the treatment program should be started as early as possible.

Keywords: Functional outcomes, Dysfunction, Frequency of physical therapy, Lateral Epicondylitis. Tennis Elbow.

INTRODUCTION

Lateral Epicondylitis (tennis elbow) is a painful musculoskeletal condition resulting from over-use, over-stress or overexertion of the wrist extensors of the forearm. Damage to the common extensor tendon of the forearm is the common findings of this condition [1, 2]. The official taxonomy of the "Lateral Epicondylitis term was declared in 1883 by H. P. Majors in the article of The British Journal of the Sports Medicine titled as "Lawn Tennis Elbow" [3]. Most of the persons suffering from Lateral Epicondylitis are between 30 to 60 years old. Both males and females are equally affected but this condition but most severity is observed among women [4]. The duration of a typical episode of Lateral Epicondylitis is between 6 months to and 2 years [5]. Although the condition becomes chronic when symptoms persist more than three months [6]. Transverse Friction Massage (DTFM) and mobilization are the techniques that are used in tennis elbow treatment which generally aim to relieve pain, control inflammation, promote healing, improve local and general fitness, and control force loads [7]. As for the conservative treatments given for Lateral Epicondylitis are rest, ice, non-steroidal anti-inflammatory drugs, corticosteroid injections, range of motion exercises, stretching, strengthening exercises and ultrasound are commonly used [8]. In occupational populations, the

prevalence is between 2-23% [9]. In western societies, Lateral Epicondylitis is a significant economic burden resulting in a high rate of sick level [10]. DTFM, stretching and Mobilization with movement are widely chosen treatments in the case of Lateral Epicondylitis. Yet the functional outcome of these interventions needs to measured.

METHODOLOGY

Study design

A pretest-posttest study design was chosen for this research where the data was analyzed through quantitative statistics. Data were collected through the hospital based random sampling technique. Subjects who had not previously received a physical therapy intervention or corticosteroid injection with Cozens Test and Mill`s Test [11] were included as inclusion criteria and subject of lateral epicondylitis who had undergone surgery were excluded.

Study area

The Research was conducted at the Musculo-skeletal Unit of Centre for the Rehabilitation of the Paralysed (CRP) - Savar and Dhaka-Mirpur. The organization is one of the largest tertiary levels of rehabilitation centres in Bangladesh.

Physiotherapy Interventions

A total of 18 participants were introduced for the 6 weeks of interventions and assessed for pre and post-test. The patients' signed permission was obtained prior to the start of the trial. An initial baseline assessment had been completed which act as pretest data. After pre-testing, a 6-week intervention program of 40 minutes per session was initiated. In a typical 40 minutes of treatment session, all subject of Lateral Epicondylitis received general physiotherapy consisting of ultrasound (1 MHz, 1.5 W/ cm2 continuous mode) for 5 minutes, and TENS (100 Hz) for 10 minutes. Special manual treatments comprised of DTFM (10-15 minutes), stretching exercises (5 rep x1 set x 30 sec hold) for reduction of pain and increase range of motion. Additionally, wrist extensor stretching, eccentric contractions and concentric contractions using theraband were applied afterwards for functional improvement. As home advice, stretching of common extensors (5 rep x 30 sec hold) and eccentric exercise using the theraband (10 rep x 3 times a day) was prescribed.

Outcome Measures

Numeric Pain Rating Scale (NPRS) a valid 0 (no pain) to 10 (worst pain) point scale was used to measure the pain status of the subjects [12]. Patient rated tennis elbow evaluation (PRTEE) questionnaire were used to measure the functional disability of TE subjects [13]. The outcome measure during baseline assessment and effectiveness compare after 6 weeks (18 sessions) treatment.

Statistical Testing

Data was analyzed through the statistical package for social science (SPSS) version 20.0 [11]. Descriptive analysis was performed for parametric socio-demographic dependent variables (Table 1) and T test was conducted between pretest and posttest data. The alpha value was set as $p<0.000$ to 0.05 to the hypothesis to be accepted.

Ethical Consideration

The Researcher was duly concerned about the ethical issues. Before collecting data, approval was obtained from the Institution of Review Board (IRB) of Bangladesh Health Professions Institute (BHPI). The whole study has been conducted according to the Helsinki guideline.

RESULT

Table-1: The socio-demographic variable of the (n=18) participants

Variable	Frequency (n)	Percent (%)
Age		
45.39±1.65		
29-40	9	50.0
>40	9	50.0
Occupation		
House wife	7	38.9
Teacher	2	11.1
Service holder	4	22.2
Businessman	2	11.1
Day labor	2	11.1
Farmer	1	5.6
Gender		
Male	10	55.6
Female	8	44.4
Hand dominant		
Right	17	94.4
Left	1	5.6
Site involvement		
Right	13	72.2
Left	4	22.2
Both	1	5.6
Affected Part		
Medial	13	72.2
Lateral	5	27.8
Repetitive or forceful tasks or movements		
yes	17	94.4
No	1	5.6

The table 1 depict among the 18 participants that most of the participants were in their forth decade of life, where 9 (50%) participants were in their 29-40 years and 9 (50%) participants were above <40. There mean age 45.39 years and minimum age was 29 years and maximum age was 65 years. Occupation shows different distribution, 7 (38.9%) participators was house wife, 2 (11.1%) participants was teacher, 4 (22.2%) was

service holder, 2 (11.1%) was businessman, 2 (11.1%) were day laborer, 1 (5.6%) was farmer. Gender data shows most of the participants were male found 10 (55.6%). Right hand found as dominant 17 (94.4%). Mostly right hand involved 13 (72.2%). Medial site found as most affected part 13 (72.2%) and 17 (94.4%) involve with forceful task.

Table-2: The table shows pre and posttest significance of (n=18) participants

Variables	Mean pretest	Mean post-test	Mean difference	T value	p value
Pain in affected arm:	23.94	11.83	12.11	12.94	0.001**
Pain at rest	2.33	.83	1.50	10.29	0.002*
doing a task with repeated arm movement	5.44	2.61	2.83	8.69	0.003*
carrying a plastic bag of groceries	6.16	3.16	3.00	7.14	0.009*
at its least	1.66	0.50	1.66	5.77	0.168
at its worst	8.33	4.66	3.66	16.03	0.000***
Specific activities:	19.88	8.88	11.00	11.18	0.000***
Turn a doorknob	1.611	.33	1.27	7.20	0.000***
Carry a grocery bag	4.44	2.11	2.33	9.12	0.000***
Lift a full coffee cup to mouth	1.83	0.38	1.44	4.91	0.001**
Open a jar	3.55	1.83	1.72	8.16	0.000***
Pull up pants	1.77	0.66	1.11	4.89	0.000***
Wring out a washcloth or wet towel.	6.66	3.55	3.11	7.71	0.005*
Usual activities:	17.33	9.27	8.05	11.62	0.000***
Personal activities (dressing, washing)	4.389	2.50	1.88	7.08	0.000***
Household work (cleaning, maintenance)	4.44	2.22	2.22	7.46	0.000***
Work (your job or everyday work)	4.83	2.50	2.33	8.33	0.000***
Sporting activities	3.67	2.05	1.611	5.12	0.002*

*p=0.05, **p=0.001, ***p=0.000

The overall findings in the area of Pain in affected arm, specific activities and usual activities represent that, the mean score of participants before applying treatment protocol for Lateral Epicondylitis patients and after applying treatment protocol for Lateral Epicondylitis patients. The overall finding is showing in (table 2). Therefore, the mean score of participants in the area of overall pain in affected arm found pretest was 23.94 and posttest was 11.83 and (p=0.001), specific activities pretest was 19.88 and posttest was 8.88 and (p=0.000), and usual activities pretest was 17.33 and posttest was 9.27 and (p=0.001). The study showed that the average/mean scores were better after receiving treatment protocol for Lateral Epicondylitis patients.

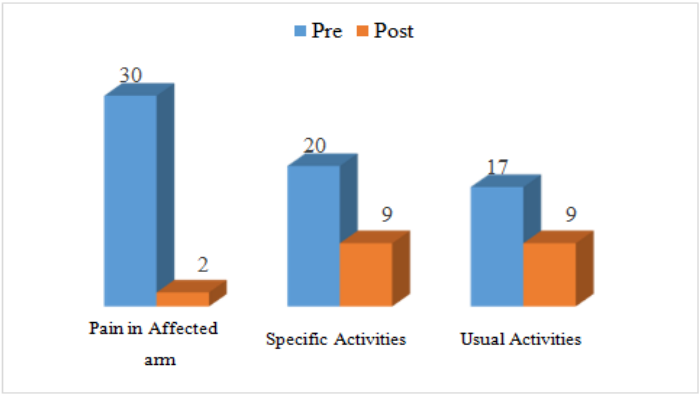

Fig-1: The mean improvement in different variables between pretest and post test

This Figure 1: Depict that the distribution of pretest pain in affected arm 6 (30%), specific activities 4 (20%) and in usual activities 3 (17%) which was comparatively reduced after 6 weeks physiotherapy treatment found in posttest distribution was in affected arm 1 (2%), specific and usual activities was same in each 2 (9%).

DISCUSSION

In this study most of the participants were in their fourth decade of life, where 9 (27.8%) participants were in their 29-40 years and 9 (44%) participants were above <40 years. There mean age 45.39 years and minimum age was 29 years and maximum age was 65 years. Occupation shows different distribution, 7 (38.9%) participators was house wife, 2 (11.1%) participants were teacher, 4 (22.2%) was service holder, 2 (11.1%) was businessman, 2 (11.1%) was day laborer, 1 (5.6%) was farmer. Gender shows most of the participants were male found 10 (55.6%). Right hand found as dominant 17 (94.4%). Mostly right hand involved 13 (72.2%). and forceful tasks or movements (94.6%). This research found significant improvement in pain. The mean score of participants in the area of overall pain in affected arm found pretest was 23.94 and posttest was 11.83 and (p=0.001), specific activities pretest was 19.88 and posttest was 8.88 and (p=0.000), and usual activities pretest was 17.33 and posttest was 9.27 and (p=0.001). The study showed that the average/mean scores were better after receiving treatment protocol for Lateral Epicondylitis patients. Most significant improvement of pain is, while patient at its worst. Which P value is (p=0.000). This research also found significant improvement in the functional disability of the participators. After 6 weeks treatment session, the specific activities of the participators improve highly. Highly significant specific activities are Turn a doorknob, carry a grocery beg, open a jar, pull up pants and their p value is (p=0.00) which is below (p<0.05). Also highly improve usual activities after taken 6 weeks of physiotherapy intervention are Personal activities (dressing, washing), Household work (cleaning, maintenance), Work (your job or everyday work) and their p-value is (p=0.000).

Evidence from a randomized controlled trial [14] to investigate the effect of physiotherapy interventions on Pain, Dysfunction, and Grip Strength of Patients with acute Lateral Epicondylitis and all groups received conventional physical therapy for 40 minutes and therapeutic exercises for 20 minutes per session during 6 weeks. The dysfunction score according to the interval was assessed with a PRTEE, the 3 days per week group showed a significant decrease after 3 and 6 weeks of intervention (p<0.05), and there was a significant decrease at 6 weeks (p<0.05). The decreases from 3 weeks to 6 weeks were greatest in the 6 days per week group. Evidence from Fyfe [15] reported that strengthening exercise is effective for treating diseases or protecting injuries resulting from increases in the threshold of pain in stressful situations. Evidence from Glazebrook *et al*., [16] also reported that an exercise program with appropriate stretching and strengthening exercise for the Lateral Epicondylitis is very important in strengthening the tendon region and improving functional activities. Evidence from Smidt *et al*., [17] observed that Lateral Epicondylitis is occurring most often in the age group of 40-60 years except in tennis players who are generally younger and it affects men and women to the same degree.

CONCLUSION

The result of this study has identified the effect of specific physiotherapy intervention for reducing pain and disability in tennis elbow patients. Participants showed a greater benefit, which indicates that physiotherapy interventions have the positive outcome in the management of Lateral Epicondylitis. The study examined the effectiveness of physiotherapy treatment programs for 6 weeks to reduce the pain and improve functional ability. This study should be replicated and expanded to confirm the validity of the findings.

RECOMMENDATION

A double-blinded Randomized Clinical trial with a large number of participants could be conducted in a different rehabilitation centre in Bangladesh. Where data were randomly assigned and the treatment provider would be well trained. An external data auditor audits the data for its efficacy and validity.

Fund

This study was entirely authors funded.

Conflict of Interest

No conflict interest.

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