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THE IMPACT OF LATERAL EPICONDYLITIS ON QUALITY OF LIFE

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ABSTRACT

Background: Lateral epicondylitis is a work related disorder which is considered to be due to over-use or over-stress of the wrist extensors of the forearm. The patient suffers from pain and decreased function which affects the basic activities in daily life. This reduction in function leading to disability may affect the quality of life as it includes items related to self care, usual activities, emotional problems, pain etc. The present study was conducted to study the impact of Lateral epicondylitis on quality of life.

Methods: 52 subjects diagnosed with Lateral epicondylitis were included in the study according to the inclusion and exclusion criteria. Outcome measures were: pain using VAS, functional disability using PRTEE and health-related quality of life using SF- 36. The subjects were explained the aim of the study and then a prior informed consent form was taken. The subjects then were instructed how to fill the questionnaires and were thereafter handed over the questionnaires which were filled by the subjects themselves.

Results: A significant positive correlation was found between pain and functional disability ($p < .001$). A significant negative correlation between pain and physical ($p = .014$) and mental ($p = .052$) component summary scores of quality of life was found. A significant negative correlation was found between functional disability and physical ($p = .002$) and mental ($p = .015$) component summary scores of quality of life. Also a significant correlation was found between physical and mental component summary scores of quality of life ($p < .001$).

Conclusions: Significant correlation was seen between pain, 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.

Keywords: Lateral epicondylitis, Tennis elbow, Quality of life, Functional disability, Pain, PRTEE, SF-36

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INTRODUCTION

Quality of life is a subjective sense of wellbeing encompassing physical, psychological, social and spiritual dimensions.^{3,4,5} It is a conscious cognitive judgment of satisfaction with one's life. As the functioning and life satisfaction of a patient are affected by a disease or treatment related symptoms, it is important to examine the effects of various symptoms on patient's level of functioning to judge the overall functional status of the patients.³ Health related quality of life helps in quantification of the impact of a disease on an individual's functioning and well being by assessing multiple aspects of a patient's self-perceived well being.^{3,4}

Lateral epicondylitis is a painful disabling condition and is the most common affliction of the elbow.^{5,6} It is a work related disorder that occurs due to over-use and over-stress of the wrist extensor muscles of the forearm, characterized by insidious pain typically attributed to repetition of one event or activity.^{6,7}

Lateral epicondylitis mainly occurs after minor and often unrecognized trauma of the extensor muscles of the forearm and so is considered to be an overload injury.^{8,9} As the tendons fail to heal properly after injury or repetitive trauma it is considered to be a form of repetitive strain injury.^{9,10} The activities of daily living of the patient in this disorder are adversely hampered as wrist extensors play an important role in maintaining wrist in extension during various ADLs.¹¹

The clinical profile of the condition encompasses pain over the lateral humeral epicondyle which may radiate to the forearm, manifesting during excessive, quick, repetitive activities involving the hand in gripping or manipulating an object.^{7,8,10,11} The main complaint is of pain and decreased function which may affect activities in daily living (holding tools, shaking hands, lifting a cup of coffee, dressing and desk or household work, hitting a backhand stroke in tennis etc).^{8, 10}

The disability associated with lateral epicondylitis may also affect quality of life as it includes items related to self-care, usual activities, emotional problems, pain etc.³ There is strong evidence that greater pain is associated with less adequate functioning and in the presence of chronic pain there is a reduced activity of the agonist muscle.^{3,4} But in case of lateral epicondylitis, there has been no relation established in literature between the severity of pain and how it further affects the functional status and quality of life of the individual. The present study was thus, conducted

to study impact of Lateral epicondylitis on quality of life.

MATERIALS AND METHODS

52 subjects males and females within the age group of 35 to 50 years diagnosed with Lateral epicondylitis presenting with pain and tenderness over the lateral epicondyle of humerus with Maudsley's, Cozen's and Mill's test or positive were included. Also, subjects were able to read and write English.

Subjects with diagnosed concomitant upper limb orthopedic condition, malignancy, polyarthritis or soft tissue inflammatory condition, upper quadrant neuro-musculoskeletal disorders that might affect grip strength, any concurrent treatment, history of surgery of elbow, rheumatoid or neurologic condition and symptoms suggestive of neurological compromise as in Carpal and radial tunnel syndrome were excluded from study.

The subjects were explained the aim of the study and informed consent was taken prior to data collection. The subjects then were instructed how to fill the questionnaires and were thereafter handed over the questionnaires which were filled by the subjects themselves.

OUTCOME MEASURES

Pain:

Resting pain was rated by the patient on the Visual Analogue Scale, with a rating from 0 to 10 score, where '0' was least pain imaginable and '10' was worst pain imaginable.

Functional disability:

It was rated by the patient on the Patient rated Tennis elbow evaluation questionnaire. The subject rated his average symptoms in the past week on a scale of 0 to 10 where 0 was "you did not experience any difficulty" and 10 was "it was so difficult you were unable to do it at all" It had 2 categories i.e. pain and functional disability. Pain was rated by the patient at 5 different activities. Functional disability constituted specific activities and usual activities. A total of five questions were included in pain, six questions under specific activities and four under usual activities.

Health-related quality of life:

It was rated by the patient on the Short Form- 36 questionnaire. The subject rated his/her symptoms that best described their health that day. It had 8 categories physical functioning, role limitations due to physical health, role of limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain and general health. A total of 10 questions were included in physical functioning, 4 under role limitations due

to physical health, 3 under role limitations due to emotional problems, 4 under energy/fatigue, 5 under emotional well being, 2 under social functioning, 2 under pain and 5 under general health.

RESULTS

There were 59.6% females and 40.4% males in study. 50% of the subjects had severe pain in Visual analog scale. Table 1 shows the mean and standard deviation of the VAS. 53.8% of all the subjects had moderate disability. Table 2 shows the mean and standard deviation of PRTEE. There was not even a single subject classified as healthy under the physical component summary score and only 4 subjects were classified as healthy under the mental component summary score of SF-36. Table 3 and 4 shows the mean and standard deviation of SF-36 (PCS and MCS) respectively.

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A significant positive correlation was found A significant positive correlation was found between pain and functional disability ($p < .001$). Scatter diagram 1 shows correlation between pain and functional disability. A significant negative correlation between pain and physical ($p = .014$) and mental ($p = .052$) component summary scores of quality of life was found. Scatter diagram 2 and 3 shows correlation between pain and quality of life (PCS) and pain and quality of life (MCS) respectively. A significant negative correlation was found between functional disability and physical ($p = .002$) and mental ($p = .015$) component summary scores of quality of life. Scatter diagram 4 and 5 shows correlation between functional disability and quality of life (PCS) and pain and quality of life (MCS) respectively. Also a significant correlation was found between physical and mental component summary scores of quality of life ($p < .001$). Scatter diagram 6 shows correlation between PCS and MCS of quality of life.

Table 1

DESCRIPTIVE STATISTICS	VAS
MEAN	6.52
STANDARD DEVIATION	1.44

Table 2

DESCRIPTIVE STATISTICS	PRTEE
MEAN	50.37
STANDARD DEVIATION	14.32

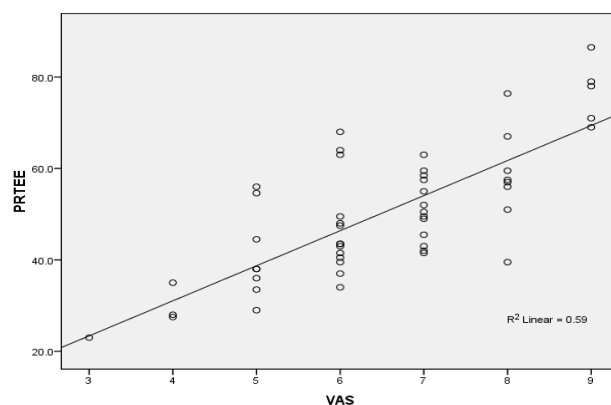
Table 3

DESCRIPTIVE STATISTICS	SF-36 (PCS)
MEAN	39.10
STANDARD DEVIATION	9.32

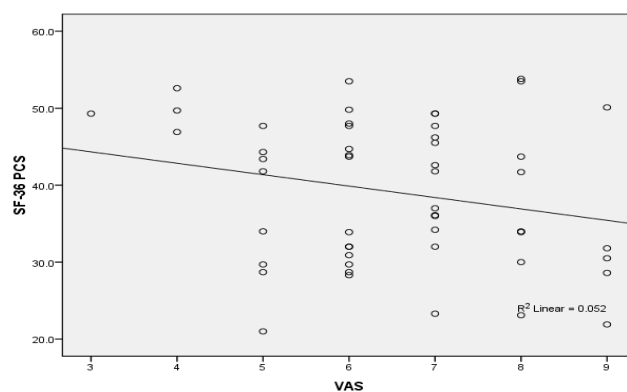
Table 4

DESCRIPTIVE STATISTICS	SF-36 (MCS)
MEAN	48.02
STANDARD DEVIATION	9.74

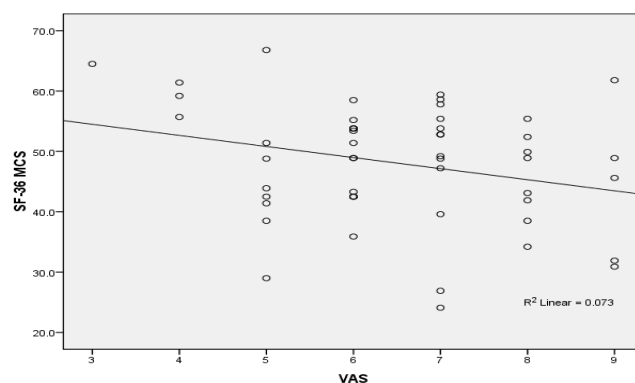
Scatter diagram 1



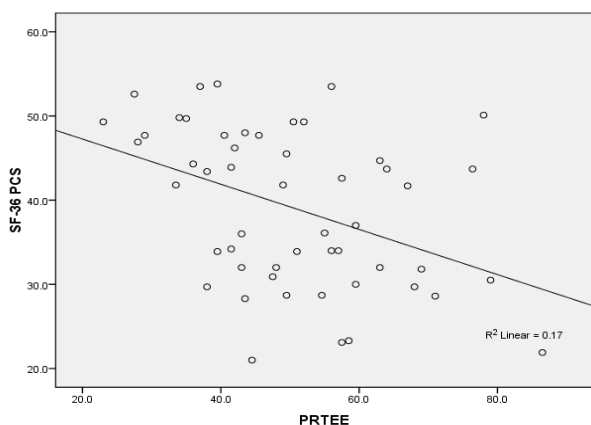
Scatter diagram 2



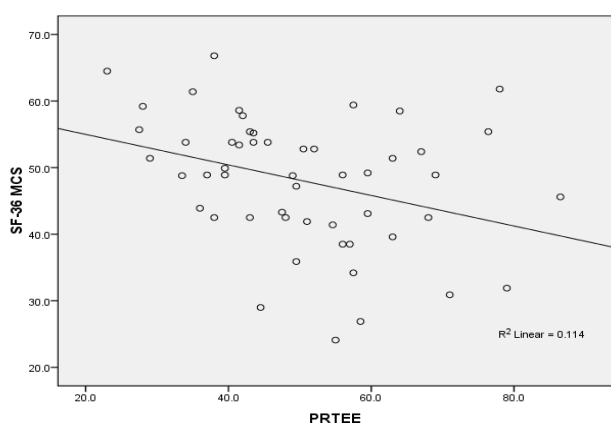
Scatter diagram 3



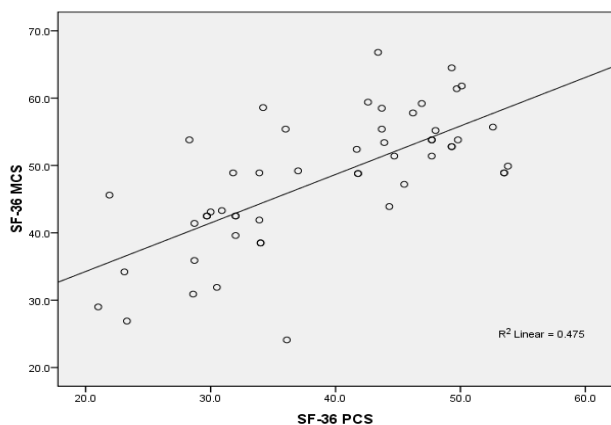
Scatter diagram 4



Scatter diagram 5



Scatter diagram 6



DISCUSSION

In this study, a total of 52 subjects (31 females and 21 males) aged 35 to 50 years with unilateral lateral epicondylitis were included and the impact of lateral epicondylitis on their quality of life was assessed using Short Form-36 health questionnaire (SF-36).

All of the subjects were in fourth and fifth decade of life. The mean age of the patients included in the study was 42.25 ± 6.065 years. This is in consistent with many studies which suggests that lateral epicondylitis typically occurs in fourth and fifth decade of life.¹² In addition to this, Johnson et al.

(2007) stated that patients with lateral epicondylitis are typically 40 years or older.²⁵ A suggested assumption for this would be that with advancing age there is reduced extensibility of the soft tissues and reduced muscle mass.

There were 31 females (59.6%) and 21 males (40.4%) in the study signifying females were more affected than males. This is in accordance with the study done by Shri et al. (2006) who reported evidence of a greater prevalence in females versus males. In a case-referent study, it was stated that, lateral epicondylitis is associated with female gender.¹² A recommended assumption for this would be that females perform laborious tasks for prolonged periods of time involving lifting of heavy weights and repetitive movements of the elbow in both job-related and household activities.

96.15% subjects had the dominant side affected which implies that the dominant hand is affected more than the non-dominant hand in lateral epicondylitis. This is supported by Kaczmarek et al. (2008) stated LE occurs in the dominant arm in 75% of the population.¹⁴ This might be because of overuse, overstress and over-exertion of the wrist extensors of the forearm as seen in lateral epicondylitis. The dominant hand is always used extensively in all the occupational, household and activities of daily living, making the dominant hand more susceptible to degenerative changes occurring in lateral epicondylitis than the non-dominant hand.¹⁵

Results of pain assessment revealed that 50% of the patients with LE had severe pain on VAS of which 65.4% were females and 34.6% were males which signifies that half of the patients in our study had severe pain. 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.

On the scores of PRTEE, 25% of the subjects had mild disability, 53.8% had moderate disability and 21.2% had severe disability. 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.^{10,11} This is supported by Flatt et al. (2008) 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.¹⁴ Wilgen et al. (2008) also supported this fact as they found an average reduction of 43 to 64% of the grip force in these patients suggesting muscle weakness. Along with this there are a number of

constellation of symptoms like reduced performance, reaction time, speed of movement and coordination which further worsens the functional performance of the patient adding to functional disability.¹⁵

The results of our study depict that there is a significant correlation between pain, functional disability and quality of life. A positive correlation exists between pain and functional disability and a negative correlation between functional disability and quality of life. With an increase in intensity of pain there is an increase in the functional disability and a consequent decrease in quality of life of the patient both physically and mentally.

The severity of pain experienced by the patient and their quality of life had a significant negative correlation. This means that with an increase in pain there was reduction of scores of QOL depicting a lower QOL. This is supported by Wang et al. (1999) who determined that pain severity is an important variable to be taken into account when quality of life outcome measures are considered.³ Lame et al. (2005) also support that pain has negative consequences for general health and for social and psychological well-being thus affecting negatively their health-related quality of life.^{5,7}

A significant positive correlation between severity of pain and functional disability in our study implies that with an increase in pain there is increase in scores of PRTEE denoting increased functional disability. This was equally evident in both males and females. With the increase in intensity of pain it would be difficult to perform certain movements.^{12,13,14} This is in collaboration with Flatt et al. (2008) 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.¹⁵ Liem et al. (2011) evaluated that in elbow pathologies there is 56.1% reduction in the functional performance of the patient due to pain. These reductions strongly impact the performance of the patient in addition to holding back the patient mentally.

A significant negative correlation between functional disability and QOL signifies that as the functional disability of the patient increases QOL score are reduced causing shift of the patient from healthy category towards the average and unhealthy category. This reduction in functional disability, negatively impacts the QOL of the patient hampering it both physically and mentally. This is in accordance to Wilgen et al. (2008) who concluded that the extent of disability due to pain

is such that even a strength reduction of 20 to 30% in a painful limb, appears to be normal to patient because of the negative mental impact of the disease.¹⁴

Thus, we conclude that Lateral epicondylitis hampers the Quality of life of the patient as both physical and mental component summary scores of Short form-36 health questionnaire were lowered. So, in our treatment regime, the intervention and moral boost up when given in conjunction would lead to a better rehabilitation of the patient. As a part of our treatment the patient should be well informed about the benign nature of the disease that makes early diagnosis and treatment of the patient very important to prevent the progression towards chronicity which is documented to have a negative impact on QOL.

The limitation of the present study is small sample size, constrained age group. Furthermore, the duration of this study is short. However, the advantage of the present study is that it gives a clue on the impact of Lateral epicondylitis on quality of life. Future studies should be performed with larger sample size and with all age groups. Also, comparison of different occupations can be done to further strengthen our observations.

CONCLUSION

This present study concluded that Lateral epicondylitis has a negative impact on quality of life as both physical and mental component summary scores of Short form-36 health questionnaire were decreased. Physical component summary score was more severely affected in comparison to mental component summary scores. In LE the patient suffers from pain and reduced function which affects the basic activities of daily living ultimately hampering the QOL of the patient. Therefore, the patient should be well informed about the benign nature of the disease that makes early diagnosis and treatment of the patient very important to prevent the progression towards chronicity which is documented to have a negative impact on QOL. In addition to physical therapy approaches applied to treat lateral epicondylitis, moral boost up for the patients is also necessary.

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