

**PREVALENCE AND ASSOCIATION OF LOCAL AND GLOBAL
MUSCLE TRIGGER POINTs AMONG HOUSE WIVES WITH
LATERAL ELBOW PAIN : AN OBSERVATIONAL STUDY**

By

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In

ORTHOPEDICS

Under the guidance of

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Abhinav Bindra Sports Medicine and Research Institute

Bhubaneswar

2022-2024



DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation / thesis entitled **Prevalence and association of local and global muscle trigger points among house wives with lateral elbow pain : An observational Study** is a bonafide and genuine research work carried out by me under the guidance of **Dr. Deepak Kumar Pradhan , Head of the department , Abhinav Bindra Sports Medicine and Research Institute , Bhubaneswar.**

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LIST OF ABBREVIATION

- **MTrP-** Myofascial trigger point
- **LE-** Lateral epicondylitis
- **ECRB-** Extensor carpi radialis brevis
- **SPSS-** Statistical Package for Social Science

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ABSTRACT

PREVALENCE AND ASSOCIATION OF LOCAL AND GLOBAL MUSCLE TRIGGER POINTs AMONG HOUSE WIVES WITH LATERAL ELBOW PAIN :AN OBSERVATIONAL STUDY

BACKGROUND: Indian women are doing repeated pronation and supination activities like cooking, chopping vegetables, twisting cloths, sweeping. This repeated activities can leads to cumulative trauma or over use injury, hence this leads to trigger point formation then it may leads to lateral elbow pain . The purpose of the study was to evaluate and investigate the prevalence of trigger points in local and global muscles among housewives experiencing lateral elbow pain and the potential associations between trigger points and lateral elbow pain using VAS score. The aim of the study to find out the prevalence and association of local and global muscles trigger points among house wives with lateral elbow pain.

METHODS: An observational study was conducted on a total of 110 housewives aged between 30-50 years fulfilling the inclusion criteria were selected for the study with lateral elbow pain. Pain intensity was measured using validated pain scale such as Visual Analog Scale (VAS) for pain assessment .Musculoskeletal examination and manual palpation were conducted by therapist to identify trigger points in local and global muscles surrounding the lateral elbow based on tenderness , taut band and referred pain pattern.

RESULT- Result showed that in house wives the most prevalent area for trigger point was ECRB followed by brachioradialis , bicepbrachii , supinator , tricepbrachii , infraspinatus , supraspinatus , teresminor,posterior deltoid and the least prevalent was tricep brachii.The association between the presence of trigger points in different muscles and severity of lateral elbow pain showed that tricep brachii , supinator , bicepbrachii , brachioradialis were statistically significant.

CONCLUSION- The study concludes that Local and global muscle trigger points (MTrPs) are highly prevalent among housewives with lateral elbow pain. There is a significant association between local MTrPs in the forearm and lateral elbow pain.Global MTrPs in the shoulder regions are also associated with lateral elbow pain, indicating a potential contribution to the condition.

KEY WORDS- Biomechanics , Ergonomics , Elbow joint mechanics , Muscle imbalance , Movement pattern , Occupational factors ,Repetitive strain injury , Shoulder and scapular stability.

Prevalence and association of local and global muscles trigger points among house wives with lateral elbow pain : An observational study

INTRODUCTION

'Lateral elbow pain' is described by many analogous terms in the literature, including "lateral epicondylitis", "lateral epicondylalgia", "rowing elbow", "tendonitis of the common extensor origin", and "peritendonitis of the elbow.(1)

Lateral epicondylitis, is a painful debilitating musculoskeletal condition that impacts substantially on society. About 7 patients per 1000 per year attending general medical practices and as high as 15% of workers in highly repetitive hand task industries, contract this condition.(2,3)

It is defined as pain on the facet of the lateral epicondyle, which is reproduced by digital palpation on the above site, resisted wrist extension, resisted middle finger extension, and gripping.

Chronic epicondylitis affects 1% to 3% of the adult population of India and commonly affect the dominant arm between 30–50 years of age and seems to be more severe and long-standing in women. The main clinical presentation and the in lateral epicondylitis are decreased grip strength, decreased functional activities, and increased pain, which may have significant impact over activities of daily living.(1,2)

The principal site of pathological changes is evident on extensor carpi radialis brevis tendon along with extensor digitorum communis , extensor digitorum longus . The mechanism of injury is increased tension due to overloading on muscle which lack of endurance in forearm due to repetition of wrist extensors or the highest degree of torque and abrupt increase in activity.(5)

Myofascial trigger points (MTrPs) are localized areas of muscle tissue that exhibit hyperirritability, leading to pain, stiffness, and limited range of motion. Musculoskeletal (MSK) dysfunction encompasses various disorders affecting the muscles, bones, joints, and associated structures. The relationship between MTrPs and MSK dysfunction is intricate and bidirectional.(6)

MTrPs Contribute to MSK Dysfunction like pain and stiffness, muscle imbalances.(17)

MSK Dysfunction Contributes to MTrP Development:

- 1. Trauma and injury:** MSK injuries can lead to MTrP formation.
- 2. Overuse and repetitive strain:** Prolonged muscle activity can induce MTRP development.

3. Poor posture and biomechanics: Altered movement patterns increase MTrP susceptibility.

4. Neurological and psychological factors: Stress, anxiety, and depression can contribute to MTrP formation.

Myofascial trigger point is defined as a musculoskeletal disorder associated with motor, sensory and autonomic abnormalities. Motor abnormality is characterised by presence of myofascial trigger point (MTrP) in a taut band. Sensory abnormalities are characterised by tenderness and referred pain. Autonomic abnormalities are characterized by localized vasoconstriction and pilomotor responses.

The Vital Role of Shoulder and Scapular Stability in Elbow Joint Function :

The human body's kinetic chain is intricately connected, with each joint influencing the movement and function of adjacent joints. The shoulder and scapular complex plays a pivotal role in elbow joint function, and instability in this region can significantly impact elbow movement and overall upper limb performance.

The scapula, or shoulder blade, serves as the foundation for the shoulder joint, providing attachment points for muscles that control arm movement. The shoulder joint, comprising the glenohumeral, acromioclavicular, and sternoclavicular joints, works in conjunction with the scapula to facilitate arm movement. The elbow joint, consisting of the humeroulnar, humeroradial, and proximal radioulnar joints, relies on the shoulder and scapular complex for proper alignment and movement.

Shoulder and scapular stability ensure efficient transmission of forces from the shoulder to the elbow. The rotator cuff muscles, comprising the supraspinatus, infraspinatus, teres minor, and subscapularis, work synergistically to maintain shoulder stability. Scapular stabilizers, including the serratus anterior and trapezius, control scapular rotation and positioning.

Biomechanical errors in the shoulder and elbow joints can play a crucial role in the development of trigger points in local and global muscles among housewives experiencing lateral elbow pain. As they engage in repetitive household tasks and chores, housewives often perform actions that subject the shoulder and elbow joints to excessive stress and incorrect alignment.

Housewives are the backbone of many families, managing the household, caring for children, and maintaining a comfortable living environment. However, the physical demands of their daily activities often go unrecognized, putting them at risk for injuries and long-term health consequences. This essay explores the most common activities performed by housewives and their associated biomechanical implications.(18)

The activities done by housewives most frequently are cooking, cleaning, laundry, childcare, and grocery shopping.

These tasks may seem mundane, but they involve repetitive movements, lifting, bending, and twisting, which can lead to musculoskeletal disorders (MSDs) and repetitive strain injuries (RSI).

Cooking, for instance, requires prolonged standing, reaching, and gripping utensils, leading to shoulder and neck strain. The repetitive motion of chopping, stirring, and mixing can cause RSI in the hands and wrists.

Cleaning is another activity that poses biomechanical risks. Vacuuming and mopping involve repetitive bending, twisting, and lifting, straining the shoulders.

Laundry, often overlooked as a physically demanding task, involves lifting and carrying heavy loads, bending, and twisting. Folding and ironing require repetitive wrist and hand movements, increasing the risk of RSI.

Childcare, a critical aspect of household responsibilities, involves lifting and carrying children, bending, and stooping. These actions can lead to shoulder strain, as well as potential falls and accidents.

Grocery shopping, although less frequent, poses biomechanical risks due to carrying heavy bags, repetitive lifting, and bending.

Over time these biomechanical errors can lead to muscular imbalances and aberrant movement patterns, contributing to the onset and perpetuation of lateral elbow pain.

Repetitive strain on the shoulder and elbow : Housewives repeat tasks such as lifting heavy objects , carrying groceries , and performing household cleaning which involves repetitive use of shoulder and elbow joints.

Repetitive movements especially when executed with poor form or without adequate rest can result in increased stress on the muscles around the shoulder and elbow . This repetitive strain can create trigger points particularly in muscles like rotator cuff and fore arm flexors/extensors contributing to lateral elbow pain.

Incorrect Ergonomics and Posture : Incorrect ergonomics while performing household activities can lead to poor posture and suboptimal alignment of the shoulder and elbow joints.

Over time these imbalance can give rise to trigger points in affected muscles which can refer pain to the lateral elbow region.

Prolonged periods of poor posture , such as rounded shoulders and extended elbows can cause muscular imbalance and overload certain muscle groups.

Overloading and Compensation : Housewives often perform tasks that involve lifting , carrying and reaching overhead , which demand significant strength and stability from the shoulder and elbow joints . If certain muscles are weak or fatigued , the body may compensate by overloading other muscle groups to complete the task.

These compensatory movements can lead to excessive stress on certain muscles, promoting the development of trigger points and contributing to lateral elbow pain.

Muscle Imbalance and Activation Patterns : Repetitive household activities may lead to muscle imbalance, wherein certain muscles become over active , while others become underactive.

For instance, the chest and front shoulder muscles may become tight and dominant , while the upper back and shoulder blade stabilizers weaken.

This imbalance can cause abnormal joint mechanics and place increased strain on specific muscles , resulting in trigger points and lateral elbow pain.

NEED OF THE STUDY

- The need of the study is to identify the population at the risk of developing trigger point in elbow musculature which in long term may develop functional limitation and also impair daily activities and quality of life.
- Housewives in particular are susceptible to developing lateral elbow pain due to repetitive movements and activities involved on household works.
- Despite its prevalence and impact on housewives well-being, the role of trigger points in the local and global muscles surrounding the lateral elbow in the etiology and progression of lateral elbow pain understudied..
- Therefore the observational study designed to find out prevalence and association of local and global muscle trigger points among house wives with lateral elbow pain.

AIM OF THE STUDY

- To find out the prevalence and association of local and global muscles trigger points among house wives with lateral elbow pain.

OBJECTIVE OF THE STUDY

- To evaluate and investigate the prevalence of trigger points in local and global muscles among housewives experiencing lateral elbow pain and the potential associations between trigger points and lateral elbow pain using VAS score.

Hypothesis

Null hypothesis

There is no significant difference in the prevalence and association of local and global muscle trigger points among house wives with lateral elbow pain.

Alternative hypothesis

There is a significant difference in prevalence and association of local and global muscle trigger points among house wives with lateral elbow pain.

REVIEW OF LITERATURE

- S. Shukla et al.(2022) carried out a comparative analysis Of “Using Additional Prp Injection In Lateral Epicondylitis (Tennis Elbow) Patient’s Undergoing Conventional Conservative Treatment” stated that lateral epicondylitis is commonly found in people who does rotatory motion of forearm (i.e repetitive supination and pronation of forearm with elbow in near full extension like knitting work , cooking and twisting cloth activities contributed by house wives seen Indian settings).(12)
- Yujin Cho et al.(2022) carried out a study on “Healthcare Utilization for Lateral Epicondylitis : A 9-Year Analysis of the 2010-2018 Health Insurance Review and Assessment Service National Patient Sample Data” state that Regarding the sex and age-related trends of patients seeking healthcare for lateral epicondylitis in the specified nine-year periods , the number of female patients (96,258,53.66%) was about 1.15 times greater than that of male patients (83,136,46.34%).This is consistent with a previous report that the prevalence of lateral epicondylitis is slightly higher among women (1.1-4.0%) than men (1-1.3%).(15)
- Park et al. (2021) carried out a crossectional study on “Factors associated with lateral epicondylitis of the elbow” state that female sex dominant-side involvement,manual labor and ipsilateral rotator cuff tear were found to be risk factor of lateral epicondylitis because the study was performed in a rural area . Many females were agricultural workers whose jobs involved high-intensity labor and variable posture . A relationship of lateral epicondylitis to the degree of heaviness of labor which would explain the relatively high prevalence in this study.(14)
- S.Cutt et al. (2020) carried out a clinical review article on “Tennis Elbow” state that extensor carpi radialis tendinitis(ECRT) (i.e lateral epicondylitis humeri)is a local inflammation near the proximal attachments of wrist extensors characterised by pain in palpation of the lateral epicondyle of the humerus and in resisted wrist extension and also stated that the prevalence is 1%-3% and the peak age interval is 30-50 years in females. (11)

- Amita Agarwal et al. (2020) carried out a study on “Prevalence of Myofascial Trigger Points in Brachioradialis , Bicep Brachii, Tricep Brachii, Supinator and Extensor Carpi Radialis Brevis in Lateral Epicondylitis” state that subjects who have lateral epicondylitis the presence of trigger points is maximum in brachioradialis (82.5%) followed by bicep brachii (55%) extensor carpi radialis (20%) tricep brachii (27%) and supinator (2.5%). Most of the patients complained of pain at the elbow while doing house hold chores.(16)
- Hasn Shakeri et al. (2019) carried out a randomized clinical trial on “The effects of kinesiotape on the treatment of lateral epicondylitis” state that developing myofascial trigger point (MTP) in the origin of the muscle attached to lateral epicondyle due to overuse of localized fibrositis would be another pathophysiological cause of symptoms of LE and also state that MTP is a spot tenderness in a taut band of muscle which is sensitive to palpation or compression. Referred pain and local twitch responses are signs for it . It has been considered that mechanical overload, trauma, overuse, postural faults, or psychological stress could induce MTP.(13)

METHODOLOGY

- **Study design:** An observational study
- **Study setting:** Private clinics around Cuttack and Bhubaneswar area
- **Study duration:** 12 months
- **Study population:** House wives with lateral elbow pain
- **Sample size:** 110 house wives

INCLUSION CRITERIA

- House wives having lateral elbow pain.(minimum 3 months)
- Age between 30-50
- VAS score between 3-7

EXCLUSION CRITERIA

- History of supracondylar fracture
- History of cervical radiculopathy
- Pain due to any systemic inflammatory disease rheumatological condition , any neurological conditions
- History of any fracture of distal end of humerus and proximal end of radius and ulna
- History of ligament injury of elbow joint
- Uncooperative patients

METHODS

- The institutional Ethical committee evaluated and approved the current study. An observational study was carried out in private clinics around Cuttack and Bhubaneswar area .House wives having lateral elbow pain lasting minimum 3months , age between 30 to 50 years and pain intensity in VAS score i.e 3-7 were included in the study.
- House wives were excluded from this study if they had history of supracondylar fracture, history of cervical radiculopathy, Pain due to any systemic inflammatory disease rheumatological condition , any neurological conditions, history of any fracture of distal end of humerus and proximal end of radius and ulna, history of ligament injury of elbow joint.
- House wives also excluded if they were uncooperative. Total 110 participants were screened for this study .Written informed consent was taken from participants before participating in the study.
- For demographic data participant's age , duration of lateral elbow pain and relevant medical history was recorded. Pain intensity was measured using VAS. Manual palpation was used to locate trigger points. The trigger points were identified based on tenderness , taut bands and referred pain pattern. Trigger points locations , pain severity were recorded for each participants.

SAMPLE SIZE ESTIMATON

Sample size estimation was done using G Power software , with an effect size of 0.5 and power of 0.95 with level of significance set at 0.05 considering mean value as 14.29 ± 4.38 the estimated sample size came to 110 subjects ,using two tailed test.

STATISTICAL ANALYSIS

Data was analysed by using the statistical package **SPPSS 22.0**. The level of significance was set $p < 0.05$. The association statistics was done using Chi-square test . The degree of association were measured using Phi Cramer's "V" criteria. Excel sheet was used to calculate the prevalence percentage of trigger points.

RESULT

SI No.	Name of the muscles	Total no of house wives	Prevalence
1	BRACHIORDIALIS	77	70%
2	BICEPBRACHII	68	61.81%
3	SUPINATOR	68	61.81%
4	ECRB	81	73.63%
5	TRICEPBRACHII	60	54.54%
6	SUPRASPINATUS	65	59.09%
7	INFRASPINATUS	68	61.81%
8	TERESMINOR	76	69.09%
9	POSTERIODELTOID	77	70%

[TABLE NO. 1 – PREVALENCE OF TRIGGER POINTS]

Table -1 presents that prevalence of trigger points associated with lateral elbow pain in housewives are Brachioradialis(70%) , Bicepbrachii (61.81%),Supinator (61.81%) , ECRB (73.63%) , Tricepbrachii (54.54%) , Supraspinatus(59.09%) , Infraspinatus (61.81%) , Teresminor(69.09%) , Posterior deltoid(70%).

SL NO.	MUSCLES & TRIGGERPOINTS	χ^2 Phi crammers V	P-Value
1	BRACHIORDIALIS	0.234	0.014
2	BICEPBRACHII	0.201	0.035
3	SUPINATOR	0.284	0.003
4	ECRB	0.066	0.489
5	TRICEPBRACHII	0.196	0.04
6	SUPRASPINATUS	0.162	0.089
7	INFRASPINATUS	0.076	0.423
8	TERESMINOR	0.168	0.079
9	POSTERIODELTOID	0.101	0.287

[TABLE – 2- ASSOCIATION BETWEEN THE TRIGGER POINTS AND LATERAL ELBOW PAIN]

Table -2 presents the association between the presence of trigger points in brachioradialis , bicepbrachii , supunator , ecrb , tricepbrachii,supraspinatus, infraspinatus, teresminor,posteriordeltoid and severity of lateral elbow pain in VAS score.

The study examined the association between trigger points in various muscles and VAS score.

The study examined the association between trigger ppints in various muscles and VAS scores . Here are the results;

Brachioradialis : significant association ($p=0.014$), Bicepbrachii: significant association ($p=0.035$), Supinator: Significant association ($p=0.003$), Tricepbrachii: ($p=0,489$), Supraspinatus: no significant association ($p=0.089$), Infraspinatus: no significant association($p=0.423$) , Teresminor: no,significant association($p=0.079$), Posterior deltoid : no significant association ($p=0.287$).The χ^2 ,Phi and cramer's V values indicate the strength of association , with higher values indicating stronger associations. The P-Values indicates statistical significance , wth values <0.05 indicating significant associations.

DISCUSSION

Housewives are prone to repetitive strain injuries due to their daily activities, making them a high-risk group for developing lateral elbow pain and myofascial trigger points. Lateral elbow pain can make it challenging to perform tasks like cleaning, cooking, and laundry, which require repetitive arm movements.

They may struggle with gripping utensils, pots, or pans, and lifting heavy objects like grocery bags or laundry baskets. Caring for children can be challenging, as activities like lifting, feeding, or playing with kids can exacerbate the condition. Repetitive tasks like chopping, stirring, or whisking can aggravate lateral elbow pain.

Activities like vacuuming, dusting, or organizing may become difficult due to the strain on the elbow. Even personal activities like washing dishes, taking a shower, or getting dressed can be painful. Housewives may need to limit social activities, like gardening, crafting, or spending time with friends, due to discomfort or pain. Chronic pain can lead to frustration, stress, and anxiety, affecting mental well-being and overall quality of life.

The overuse and repetitive strain, poor posture and biomechanics, muscle imbalances, inflammation and pain, stress and tension can lead to cumulative trauma or over use injury. Hence this may lead to trigger point formation and then it may lead to lateral elbow pain.

So the aim of the study was to find out the prevalence and association of local and global muscle trigger points among housewives with lateral elbow pain.

In this study we found the prevalence of common trigger points associated with lateral elbow pain in housewives are ECRB (73.63%), Brachioradialis (70%), Biceps brachii (61.81%), Supinator (61.81%), Triceps brachii (54.54%), Supraspinatus (59.09%), Infraspinatus (61.81%), Teres minor (69.09%), Posterior deltoid (70%). The associations between the presence of trigger points in different muscle and the severity of lateral elbow pain showed that Triceps brachii, Supinator, Biceps brachii, Brachioradialis were statistically significant.

This study reveals a high prevalence of local and global muscle imbalances among housewives with lateral elbow pain and myofascial trigger points. The findings suggest that:

1. Local muscle imbalances are a significant contributor to lateral elbow pain, with forearm rotation weakness being prevalent.
2. Global muscle imbalances, including shoulder protraction, scapular dyskinesis, and core weakness, are also common and associated with lateral elbow pain intensity, disability, and quality of life.
3. Association between local and global muscle imbalances: The study highlights the interconnectedness of local and global muscle imbalances, suggesting that addressing one aspect may have a positive impact on the other.
4. Muscle imbalances as a risk factor: The high prevalence of muscle imbalances among housewives with lateral elbow pain suggests that these imbalances may be a risk factor for developing lateral elbow pain.
5. Implications for treatment: The study's findings emphasize the importance of incorporating exercises that address both local and global muscle imbalances into treatment plans for housewives with lateral elbow pain.
6. Ergonomic modifications: The study highlights the need for ergonomic modifications to reduce the strain on muscles and prevent muscle imbalances.

In this study local muscles trigger points are higher than global muscles trigger points because of local and global factors , demographic and life style factors and physiological factors.

Local Factors:

1. Repetitive strain injuries: Housewives frequently perform repetitive tasks (cooking, cleaning, laundry) involving localized muscle use.
2. Overuse of elbow extensors: Activities like lifting, carrying, and stirring lead to localized fatigue and MTrP development.
3. Poor posture and biomechanics: Prolonged standing, bending, and lifting exacerbate local muscle strain.
4. Direct trauma: Localized blows or strains to the elbow or forearm.

Global Factors:

1. Compensatory mechanisms: Housewives adapt movement patterns to avoid exacerbating lateral elbow pain, reducing global muscle activation.
2. Less frequent global muscle use: Daily activities primarily involve localized muscle use.
3. Muscle imbalances: Weakness in shoulder stabilizers and over activation of elbow extensors contribute to local MTrP development.

Demographic and Lifestyle Factors:

1. Age (25-55 years): Peak child-rearing and household responsibilities.
2. Sedentary lifestyle: Prolonged sitting, standing, or repetitive activities.
3. Lack of exercise and stretching: Reduced muscle flexibility and strength.
4. Stress and anxiety: Increased muscle tension.

Physiological Factors:

1. Muscle fiber type: Local muscles (extensor carpi radialis brevis) predominantly composed of type I fibers, prone to fatigue.
2. Neurological factors: Localized nerve entrapment or irritation.
3. Hormonal influences: Fluctuations in estrogen and cortisol levels.
1. Lateral elbow pain is a prevalent complaint among housewives, often related to myofascial trigger points (MTrPs). The study indicates a stronger association between local MTrPs and pain intensity, measured by the Visual Analog Scale (VAS) score, compared to global MTrPs. The association between local MTrPs and VAS scores is stronger due to repetitive strain injuries, muscle imbalances, poor posture and direct trauma. Understanding these factors enables healthcare professionals to develop effective treatment strategies, improving outcomes for housewives with lateral elbow pain.

LIMITATION

- The study's observational design limits the ability to establish causality between muscle trigger points and lateral elbow pain.
- Muscle trigger points were identified through palpation, which can be subjective. The absence of a control group without lateral elbow pain limits the ability to compare results.
- The study's findings may not be generalizable to other populations (e.g., working women, athletes, men).
- The study did not account for potential confounding variables (e.g., age, occupation, psychosocial factors).
- The study's method of identifying muscle trigger points through palpation may not be comprehensive or objective.
- The study did not include an intervention or treatment to address muscle trigger points, limiting the ability to assess the effectiveness .

FUTURE SCOPE

- Conduct longitudinal studies to assess the progression of muscle trigger points and lateral elbow pain over time.
- Conduct controlled trials to compare the outcomes of different treatments and establish causality between muscle trigger points and lateral elbow pain. Objective measurement tools: Utilize objective measurement tools (e.g., electromyography, ultrasound) to assess muscle trigger points and lateral elbow pain. Development of clinical guidelines: Develop clinical guidelines for the assessment and treatment of muscle trigger points and lateral elbow pain in housewives.
- Educate healthcare professionals and the public about the importance of addressing muscle trigger points and lateral elbow pain in housewives. Future research directions: Explore the relationship between muscle trigger points and other conditions (e.g., shoulder pain, neck pain) to identify potential comorbidities.

CONCLUSION

The study concludes that Local and global muscle trigger points (MTrPs) are highly prevalent among housewives with lateral elbow pain. There is a significant association between local MTrPs in the forearm and lateral elbow pain. Global MTrPs in the shoulder regions are also associated with lateral elbow pain, indicating a potential contribution to the condition. Further research is needed to explore the causal relationships between MTrPs and lateral elbow pain and to develop evidence-based treatment guidelines.

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85

APPENDIX 1:CONSENT FORM

I confirm that I have understood about prevalence and association of local and global muscle trigger point among house wives with lateral elbow pain: An observational study as explained by Ms. Shradhanjali Sahoo and is as mentioned in her study which is taking place under the guidance of Dr. Deepak Kumar Pradhan , Abhinav Bindra Sports Medicine and Research Institute(ABSMARI).I understand that my participation is voluntary and I am free to withdraw at any time, without giving any reason.

I understand that confidentiality will be maintained.

I voluntarily agree to and give my consent to be a part of the above mentioned study.

(Signature)

(Date)

APPENDIX :2
ASSESSMENT FORM

Name:

Age:

Gender: Male

☐

Female

☐

Others

☐

Dominant side:

Right

☐

Left

☐

Pain:

Site:

Onset:

Duration:

Severity:

Aggravating factors:

Reliving factors:

Trigger points:

MUSCLES	PRESENT	ABSENT
Brachioradialis		
Bicep brachii		
Supinator		
Extensor carpi radialis brevis		
Tricep brachii		
Supraspinatus		
Infraspinatus		
Teres minor		
Posterior deltoid		

MASTER CHART

SL No	NAME	AGE	Duration	SEVERE	BRACHIORADI	BICEPBRACH	SUPINATO	ECRB	TRICEPBRA	SUPRASPINA	INFRA SPINAT	TERESMI	POSTERIOR DELTOID
1	Rajlaxmi Sahoo	47	5months(D1) 4(P1)	Present	Absent	Present	Present	Present	Present	Present	Present	Absent	Absent
2	Bhabani Mohanty	49	4months(D1) 4(P1)	Absent	Absent	Present	Present	Absent	Present	Present	Present	Present	Present
3	Pranati Singh	31	8months(D2) 5(P1)	Present	Present	Present	Absent	Present	Present	Present	Present	Present	Absent
4	Nandini Mohapatra	34	7months(D2) 4(P1)	Present	Present	Present	Absent	Present	Present	Present	Present	Present	Absent
5	Subasini Rout	40	1year(D2) 7(P2)	Present	Present	Present	Absent	Present	Present	Present	Absent	Present	Present
6	Pratima Sahoo	45	6months(D1) 5(P1)	Present	Present	Present	Present	Present	Present	Present	Present	Absent	Absent
7	Muskan Begum	35	3months(D1) 4(P1)	Present	Present	Present	Present	Present	Absent	Present	Present	Present	Present
8	Monalisa Pradhan	32	9months(D2) 4(P1)	Present	Present	Absent	Present	Present	Absent	Present	Present	Present	Present
9	Rajia Begum	47	10months(D2) 7(P2)	Present	Absent	Present	Absent	Present	Present	Absent	Present	Present	Absent
10	Suman Mallick	35	6months(D1) 4(P1)	Present	Absent	Present	Absent	Present	Present	Present	Present	Present	Present
11	Binapani Mohanty	42	8months(D2) 5(P1)	Absent	Present	Present	Absent	Present	Present	Present	Present	Absent	Present
12	Mamima Mishra	45	1year(D2) 6(P2)	Present	Present	Present	Present	Absent	Absent	Present	Present	Present	Present
13	Sujata Sethi	35	6months(D1) 4(P1)	Absent	Present	Present	Absent	Present	Absent	Absent	Present	Present	Present
14	Jaganti Rana	46	3months(D1) 3(P1)	Absent	Absent	Absent	Present	Absent	Absent	Present	Present	Absent	Present
15	Puspalata Sahoo	48	6months(D1) 4(P1)	Present	Present	Absent	Present	Absent	Present	Present	Present	Present	Absent
16	Sunita Sahoo	39	6months(D1) 4(P1)	Absent	Present	Absent	Present	Present	Present	Present	Present	Absent	Absent
17	Basanti Sahoo	45	1.5years(D2) 6(P2)	Present	Absent	Present	Present	Present	Present	Present	Present	Absent	Absent
18	Saroja Gupta	37	9months(D2) 6(P2)	Present	Present	Present	Absent	Present	Present	Absent	Present	Present	Present
19	Sunita Behera	40	3months(D1) 3(P1)	Absent	Present	Absent	Present	Absent	Present	Present	Present	Absent	Absent
20	Manaswini Dash	30	4months(D1) 4(P1)	Present	Present	Absent	Present	Absent	Present	Absent	Absent	Absent	Present
21	Debasmita Nayak	37	11months(D2) 6(P2)	Present	Present	Absent	Present	Absent	Present	Present	Present	Absent	Present
22	Mamata Sahoo	41	3months(D1) 3(P1)	Absent	Present	Absent	Absent	Absent	Absent	Absent	Present	Present	Present
23	Saangeeta Mohapatra	43	7months(D2) 4(P1)	Present	Present	Absent	Present	Absent	Absent	Present	Present	Present	Absent
24	Sagarika Pradhan	43	1year(D2) 7(P2)	Absent	Present	Absent	Present	Present	Present	Absent	Present	Present	Absent
25	Ranjeeta Mohanty	36	11months(D2) 6(P2)	Present	Present	Present	Present	Absent	Present	Absent	Absent	Absent	Present
26	Sarojini Mishra	42	6months(D1) 4(P1)	Present	Present	Absent	Present	Absent	Absent	Present	Present	Present	Present
27	Susobhita Sahoo	45	3months(D1) 3(P1)	Absent	Present	Absent	Absent	Absent	Present	Absent	Present	Present	Absent
28	Jogamaya Sahoo	48	1year(D2) 7(P2)	Present	Present	Absent	Present	Present	Absent	Absent	Present	Present	Present
29	Pranati Sahoo	45	5months(D1) 4(P1)	Present	Present	Absent	Present	Absent	Present	Present	Absent	Present	Absent
30	Srimoyee Das	35	4months(D1) 3(P1)	Present	Absent	Absent	Present	Absent	Absent	Absent	Present	Present	Present
31	Rima Behera	42	9months(D2) 7(P2)	Present	Present	Present	Absent	Present	Present	Present	Present	Present	Present
32	Subhadra Mohanty	38	7months(D2) 6(P2)	Present	Present	Present	Absent	Present	Present	Absent	Present	Present	Present
33	Sumitra Singh	36	10months(D2) 5(P1)	Present	Present	Present	Absent	Present	Present	Present	Present	Present	Absent
34	Rajashree Sahoo	48	4months(D1) 3(P1)	Absent	Present	Present	Absent	Absent	Present	Absent	Absent	Absent	Absent
35	Sanjukta Behera	42	8months(D2) 5(P1)	Present	Present	Absent	Present	Absent	Present	Absent	Present	Present	Present
36	Ritika Patra	35	7months(D2) 4(P1)	Absent	Absent	Present	Absent	Present	Present	Absent	Present	Present	Present
37	Mitali Rout	32	10months(D2) 5(P1)	Present	Absent	Present	Present	Absent	Present	Absent	Present	Present	Present
38	Kamini Nayak	43	1year(D2) 6(P2)	Present	Present	Present	Absent	Present	Absent	Present	Present	Absent	Present
39	Sukanti Mohapatra	45	6months(D1) 4(P1)	Present	Absent	Absent	Present	Absent	Present	Absent	Present	Present	Absent
40	Mitali Pradhan	35	9months(D2) 6(P2)	Absent	Present	Absent	Present	Absent	Present	Present	Present	Present	Present

41	Manjulata Singh	39	2years(D2)	5(P1)	Present	Present	Absent	Present	Absent	Absent	Present	Absent	Present
42	Swapna Rani Pradhan	47	1year(D2)	7(P2)	Present	Present	Absent	Present	Absent	Present	Present	Present	Absent
43	Rituparna Sahu	31	11months(D2)	7(P2)	Present	Absent	Present	Present	Present	Present	Present	Present	Absent
44	Chinmayee Moharana	40	8months(D2)	5(P1)	Present	Absent	Absent	Present	Present	Present	Absent	Absent	Present
45	Srijata Mohanty	48	5months(D1)	4(P1)	Present	Absent	Present	Present	Absent	Present	Present	Absent	Present
46	Rojalin Bhanja	45	7months(D2)	4(P1)	Present	Absent	Present	Present	Present	Absent	Present	Absent	Absent
47	Nirupama Jena	38	11months(D2)	4(P1)	Present	Present	Absent	Absent	Absent	Present	Present	Present	Absent
48	Madhuchanda Mishra	48	8months(D2)	6(P2)	Present	Present	Present	Present	Present	Present	Present	Absent	Present
49	Punyatoya Dash	32	1year(D2)	6(P2)	Present	Absent	Present	Present	Present	Present	Present	Present	Absent
50	Sushree Jena	35	5months(D1)	5(P1)	Present	Present	Present	Absent	Present	Absent	Present	Present	Present
51	Dharitri Dash	32	4months(D1)	4(P1)	Absent	Absent	Absent	Present	Present	Present	Present	Absent	Absent
52	Lilima Pradhan	30	4months(D1)	3(P1)	Absent	Absent	Absent	Absent	Present	Absent	Absent	Absent	Present
53	Ruchika Dash	37	6months(D1)	4(P1)	Present	Absent	Absent	Present	Present	Present	Present	Absent	Absent
54	Sabita Mohanty	48	15years(D2)	6(P2)	Present	Present	Present	Absent	Present	Present	Present	Present	Present
55	Anuradha Biswal	37	8months(D2)	5(P1)	Present	Present	Present	Present	Present	Absent	Absent	Present	Present
56	Subhasmita Rath	45	8months(D2)	4(P1)	Absent	Absent	Absent	Present	Present	Present	Absent	Present	Present
57	Mamini Prusty	40	5months(D1)	4(P1)	Present	Present	Present	Present	Absent	Absent	Absent	Absent	Present
58	Bebina Prusty	35	1year(D2)	5(P1)	Present	Absent	Absent	Present	Present	Present	Absent	Absent	Present
59	Sindhusuta Sahoo	48	2years(D2)	6(P2)	Present	Present	Present	Present	Present	Present	Absent	Present	Absent
60	Pragati Mohapatra	32	6months(D1)	4(P1)	Absent	Absent	Absent	Present	Absent	Absent	Absent	Present	Present
61	Bandana Patra	45	7months(D2)	5(P1)	Present	Present	Present	Present	Absent	Absent	Absent	Present	Present
62	Binodini Mishra	42	8months(D2)	4(P1)	Present	Absent	Absent	Absent	Absent	Absent	Present	Present	Present
63	Suchitra Rath	38	11months(D2)	4(P1)	Absent	Absent	Present	Absent	Absent	Present	Present	Present	Absent
64	Sasmita Rath	43	4months(D1)	4(P1)	Absent	Absent	Present	Absent	Present	Present	Present	Absent	Present
65	Reena Nagak	45	1year(D2)	6(P2)	Present	Present	Present	Present	Absent	Absent	Absent	Present	Present
66	Animarani Sahoo	48	1year(D2)	7(P2)	Absent	Absent	Present	Present	Present	Absent	Present	Present	Present
67	Alisha Parween	35	7months(D2)	4(P1)	Present	Present	Absent	Absent	Present	Absent	Absent	Absent	Absent
68	Anifa Parween	30	4months(D1)	4(P1)	Absent	Present	Absent	Absent	Absent	Present	Present	Present	Present
69	Sima Sahoo	38	5months(D1)	4(P1)	Present	Absent	Present	Present	Absent	Absent	Absent	Present	Absent
70	Soudamini Nayak	48	6months(D1)	5(P1)	Present	Absent	Absent	Present	Present	Present	Present	Present	Present
71	Bijaylaxmi Tripathy	43	10months(D2)	6(P2)	Present	Present	Present	Present	Present	Present	Absent	Present	Present
72	Nalini Dash	45	5months(D1)	4(P1)	Present	Present	Absent	Absent	Absent	Present	Present	Absent	Present
73	Lipsa Mohanty	31	3months(D1)	3(P1)	Absent	Absent	Absent	Present	Present	Absent	Absent	Absent	Present
74	Santilata Pattnaik	47	8months(D2)	6(P2)	Present	Present	Present	Present	Present	Absent	Present	Absent	Present
75	Kaberi Priyadarshini	38	5months(D1)	5(P1)	Absent	Absent	Present	Present	Present	Present	Present	Present	Absent
76	Arpita Sahoo	32	6months(D1)	4(P1)	Present	Present	Present	Absent	Absent	Absent	Absent	Present	Present
77	Trupti Rekha Nayak	32	6months(D1)	4(P1)	Absent	Absent	Present	Present	Absent	Present	Present	Absent	Present
78	Anjali Rath	36	8months(D2)	5(P1)	Present	Absent	Present	Present	Absent	Present	Present	Absent	Present
79	Babita Mohanty	38	8months(D1)	4(P1)	Present	Absent	Absent	Present	Present	Absent	Present	Present	Present
80	Subhalaxmi Mohapatra	31	5months(D1)	4(P1)	Absent	Present	Present	Present	Absent	Absent	Present	Absent	Absent
81	Rasmita Mishra	35	6months(D1)	4(P1)	Absent	Absent	Present	Present	Absent	Present	Absent	Present	Absent

82	Saraswati Panda	45	7months(D2	4(P1)	Present	Present	Absent	Present	Absent	Present	Present	Absent	Present
83	Resma Begum	31	4months(D1)	3(P1)	Absent	Present	Absent	Absent	Present	Absent	Absent	Absent	Present
84	Smriti Rani Behera	32	5months(D1)	4(P1)	Absent	Absent	Present	Present	Absent	Present	Present	Present	Present
85	Alibha Sahoo	33	5months(D1)	4(P1)	Present	Present	Absent	Present	Present	Absent	Present	Present	Present
86	Kiran Nayak	47	10months(Dc	5(P1)	Present	Absent	Present	Present	Present	Absent	Present	Present	Absent
87	Susmita Mohanty	43	7months(D2	4(P1)	Present	Present	Present	Present	Absent	Absent	Absent	Present	Present
88	Ahuti Jena	36	1year(D2)	5(P1)	Absent	Present	Present	Present	Absent	Present	Present	Present	Present
89	Subhashree Nayak	45	1year(D2)	6(P2)	Present	Absent	Present	Present	Absent	Present	Present	Present	Present
90	Mamta Tripathi	34	9months(D2	4(P1)	Present	Absent	Present	Present	Present	Absent	Absent	Absent	Present
91	Annapurna Majhi	47	8months(D2	5(P1)	Present	Present	Absent	Present	Present	Present	Present	Present	Absent
92	Akanksha Dash	32	4months(D1)	4(P1)	Absent	Absent	Absent	Present	Present	Absent	Present	Present	Present
93	Riya Agarwal	35	4months(D1)	3(P1)	Present	Absent	Absent	Present	Absent	Absent	Absent	Absent	Absent
94	Swati Mishra	47	9months(D2	5(P1)	Present	Present	Present	Present	Present	Absent	Absent	Present	Present
95	Ritika Acharya	34	11months(D2	6(P2)	Present	Present	Present	Present	Present	Present	Present	Present	Present
96	Sonalika Mohapatra	32	5months(D1)	4(P1)	Present	Present	Absent	Present	Absent	Present	Present	Absent	Present
97	Meghna Nath	41	7months(D2	5(P1)	Absent	Absent	Present	Present	Present	Present	Absent	Present	Present
98	Smita Rani Malik	48	1year(D2)	6(P2)	Absent	Present	Present	Present	Present	Absent	Present	Present	Present
99	Laxmipriya Nayak	48	15years(D2)	6(P2)	Present	Present	Present	Present	Absent	Present	Present	Present	Present
100	Anandita Ratha	42	8months(D2	4(P1)	Present	Absent	Present	Present	Absent	Absent	Absent	Present	Present
101	Rupsar Begum	30	6months(D1)	4(P1)	Present	Present	Present	Present	Present	Absent	Absent	Present	Present
102	Arati Nayak	43	10months(Dc	5(P1)	Absent	Present	Present	Present	Absent	Present	Present	Present	Present
103	Aradhana Mohapatra	38	2years(D2)	6(P2)	Present	Present	Present	Present	Present	Absent	Present	Present	Present
104	Swarnalata Sethi	30	11months(D2	7(P2)	Present	Absent	Present	Present	Present	Present	Present	Present	Present
105	Bandana Mohapatra	43	5months(D1)	5(P1)	Present	Present	Present	Present	Present	Absent	Present	Present	Present
106	Dipanjali Bhuyan	48	9months(D2	5(P1)	Present	Present	Present	Absent	Present	Present	Present	Present	Present
107	Mamuni Ratha	30	3months(D1)	3(P1)	Absent	Present	Present	Present	Absent	Absent	Present	Present	Present
108	Lopamudra Senapati	38	6months(D1)	4(P1)	Present	Present	Present	Absent	Present	Absent	Present	Present	Present
109	Salini Roy	45	10months(Dc	6(P2)	Present	Present	Present	Present	Absent	Present	Present	Present	Present
110	Himadri Swain	40	7months(D2	6(P2)	Present	Present	Present	Present	Present	Absent	Present	Present	Present

**ABSMARI**

ABSMARI ETHICS COMMITTEE

ABHINAV BINDRA SPORTS MEDICINE AND RESEARCH INSTITUTE,
BHUBANESWAR, ODISHA

Prof. (Dr.) E. Venkata Rao
Chairperson

Mr. Chinmaya Kumar Patra
Member Secretary

ABSMARI/IEC/2023/063

02/09/2023

Ref. No. _____

APPROVAL LETTER
APPENDIX- VIII

Date: _____

To,

Shradhanjali Sahoo

ABSMARI

273, PAHAL, BHUBANEWAR-752101

Protocol Title: Prevalence and Association of Local and Global Muscle Trigger Points Among House wives with Lateral Elbow Pain: An Observational Study.

Protocol ID.: ABS-IEC-2023-PHY-027

Subject: Approval for the conduct of the above referenced study

Dear Mr./Ms./Dr Shradhanjali Sahoo

With reference to your Submission letter dated 12/08/2023 the ABSMARI IEC has of the Ethics reviewed and discussed your application for conduct of clinical trial on dated 02/09/2023 (Sat Day).

The following documents were reviewed and discussed

S.N.	Documents	Document (Version/Date)
1	IEC Application Form	08-08-2023
2	Informed Consent Form	08-08-2023
3	Undertaking form PI	08-08-2023
4	CRF	08-08-2023
5	COI from the Investigators	08-08-2023

The following members were present at meeting held on 02-09-2023

S.N.	Name of the Member	Designation & Qualification	Representation as per NDCT 2019	Gender (M/F)	Affiliation with the Institution (Y/N)
1	Prof. Dr. E. Venkata Rao	Professor (MBBS, MD, Dept. of Community Med.) IMS & Sum Hospital, BBSR	Chair Person	M	N
2	Dr. Satyajit Mohanty	Director-Medicare Hospital, BBSR	Basic Medical Scientist	M	N
3	Dr. Ashok Singh Chouhan	PhD. Pharmacology, Assoc. Prof. Dept. of Pharmacology, Hi-Tech Medical College & Hospital, BBSR	Basic Medical Scientist	M	N

MEMBERS
Dr. Smaraki Mohanty, Clinician
Dr. Satyajit Mohanty, Basic Medical Scientist
Dr. Ashok Singh Chouhan Basic Medical Scientist
Mr. Shib Shankar Mohanty Legal Expert
Ms. Annie Hans, Social Scientist
Ms. Subhashree Samal, Lay Person
Mr. Deepak Ku. Pradhan, Scientific Member
IEC-SECRETARIAT
Mr. Gouranga Ku. Padhy Mr. Susant Ku. Raychudamani





ABSMARI ETHICS COMMITTEE

ABHINAV BINDRA SPORTS MEDICINE AND RESEARCH INSTITUTE,
BHUBANESWAR, ODISHA

Prof. (Dr.) E. Venkata Rao
Chairperson

Mr. Chinmaya Kumar Patra
Member Secretary

Ref. No. ABSMARI/IEC/2023/063

Date 02/09/2023

MEMBERS

Dr. Smaraki Mohanty,
Clinician

Dr. Satyajit Mohanty,
Basic Medical Scientist

Dr. Ashok Singh Chouhan
Basic Medical Scientist

Mr. Shib Shankar Mohanty
Legal Expert

Ms. Annie Hans,
Social Scientist

Ms. Subhashree Samal,
Lay Person

Mr. Deepak Ku. Pradhan,
Scientific Member

IEC-SECRETARIAT

Mr. Gouranga Ku. Padhy
Mr. Susant Ku. Raychudamani

S.N.	Name of the Member	Designation & Qualification	Representation as per NDCT 2019	Gender (M/F)	Affiliation with the Institution (Y/N)
4	Dr. Smaraki Mohanty	Asst. Prof-IMS & Sum Hospital/MBBS, MD (Community Med)	Clinician	F	N
5	Mr. Chinmaya Kumar Patra	Principal-ABSMARI, MPT	Member Secretary	M	Y
6	Mr. Shiba Sankar Mohanty	Junior Counsel-Lt. Ramachandra Sarangi's Chamber / BA LLB	Legal Expert	M	N
7	Ms. Annie Hans	Disability Inclusive Development Co-Ordinator in Humanity and Inclusion (India/Nepal/Srilanka). /MA in Social Work	Social Scientist	F	N
8	Ms. Subhashree Samal	Ret. Reader-Pol Sc.	Lay Person	F	N
9	Mr. Deepak Kumar Pradhan	Asst. Prof-ABSMARI, MPT	Scientific Member	M	Y

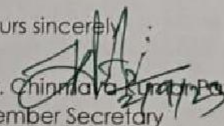
This is to confirm that only members who are independent of the Investigator and the Sponsor of the trial have voted/ provided opinion on the trial.

This Committee approves the documents and the conduct for the trial in the presented form with necessary recommendation.

The ABSMARI IEC must be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information/informed consent and requests to be provided a copy of the final report.

The ABSMARI IEC follows procedures that are in compliance with the requirements of ICH (International Conference on Harmonization) guidance related to GCP (Good Clinical Practice) and applicable Indian regulations.

Yours sincerely :


Mr. Chinmaya Kumar Patra
Member Secretary

ABSMARI Ethics Committee

Pahal, Bhubaneswar

Member Secretary

ABSMARI ETHICS COMMITTEE



2

Utkal Signature, Plot No.-273,
Ground Floor, Pahal, Bhubaneswar-752101

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iec@absmari.com