Prevalence Of Levator Scapulae Syndrome In Mobile Users Using Visual Analogue Scale (Vas) And Goniometer Measurement.

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Abstract:

Background: Levator Scapulae Syndrome is pain over the upper medial angle of the scapulae. The main function of Levator Scapulae is to elevate your shoulder and rotating the scapula downwards Levator Scapulae pain in one of the most common general muscle complains. It is one of the most common problem seen in the young adults due to there repetitive use of the TV, laptops, computers, smartphones and improper sitting posture leads the body to adapt bad posture. As Now a days use of mobile is increasing on daily basis in every age group. Use of mobile in same position for prolonged period without adequate breaks, So people often adopt flexed neck position. So this study will be aimed to find out the percentage of Levator scapulae Syndrome in population who use mobile phones on daily basis.

Methodology: In this cross sectional study 117 male and female students between the age group of 18-25 years were included by using convenient sampling method. There cervical ranges were measure by (Goniometer). Severity of pain was assessed by using visual analogue scale (VAS), levator scapulae syndrome was assessed by palpating tenderness over supermedial border of scapula by tenderness grading. Individuals Were previous neck-head trauma, History of surgical intervention in the neck area, Cervical disc disease with radiculopathy, Subject who had recent major accident or surgery in cervical area were excluded from the study.

Result: The study included 117 young adults (mean age 21.8 years, 85.5% female) participated. Average mobile phone usage: 4.6 hours/day.Results:56.4% had restricted neck movement (Levator Scapulae Syndrome),56.4% reported significant neck pain. Prevalence of Levator Scapulae Syndrome: 56.4%.

Conclusion: In this study, the prevalence of levator scapulae syndrome in mobile phone users was found 56.40%. Which can be attributed to excessive flexion of the neck. The finding underscore the importance of addressing ergonomic practices and posture to mitigate the risk of levator scapulae syndrome among the young population.

Keywords: Levator Scapulae Syndrome, Visual analogue scale (VAS), Goniometric measurement.

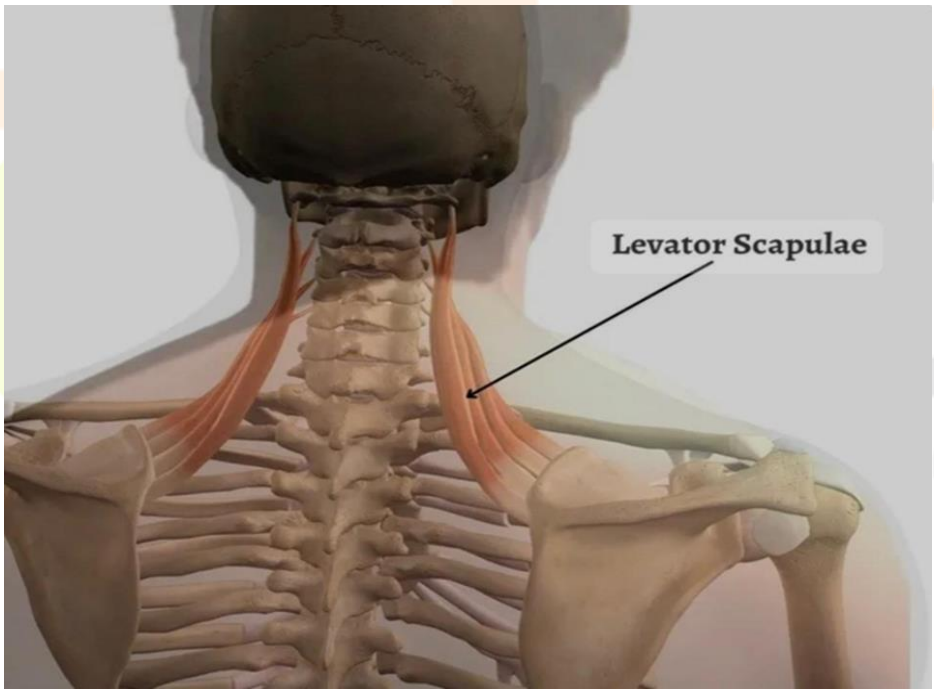
INTRODUCTION

Levator Scapulae Syndrome is pain in the upper medial angle of the scapulae. Levator Scapulae pain in one of the common general muscle complains[(1)]. The levator scapulae originates from the transverse processes of C1,C2,C3 and C4 vertebrae. And it inserts into medial aspect of the superior angle of the scapula[(1)]. The main function of Levator Scapulae is to elevate your shoulder and to rotating scapula downwards[(1)].When the levator of both shoulder are activated, then they help to bend the neck backward and to stabilize it when we look downwards. Levator scapulae syndrome (LSS) is a prevalent musculoskeletal condition often

characterized by persistent neck and shoulder pain, impacting individuals in various occupations, particularly those involving repetitive motions and prolong static postures. Along with steadily increasing in their usage, cell phone are becoming more and more important in Our lives[(1)].

Levator scapulae syndrome is often manifested by sensory disturbances, including pain and referred discomfort, and motor irregularities, such as the formation of a tense, rigid band within the muscle. Common symptoms include localized pain at the upper medial angle of the scapula, with potential involvement of the cervical and scapular regions[(1)]. This syndrome can arise from prolonged overstretching or shortening of the levator scapulae muscle, which not only causes persistent pain but may also lead to significant limitations in neck mobility, potentially impacting daily activities and occupational performance . Furthermore, anatomical variations of the levator scapulae muscle have been identified as contributing factors to the syndrome, influencing the severity and nature of the symptoms experienced. Studies have shown that individuals with a shortened levator scapulae muscle often present with reduced cervical flexion and contralateral rotation, alongside symptoms such as a forward head posture and rounded shoulders, all of which exacerbate the condition[(1)].

The levator scapulae lies deep to the trapezius. The most common pathology of levator scapulae is termed as "Levator Scapulae Syndrome" and is commonly due to poor posture, resulting in tenderness, tightness, pain over upper medial angle of scapula. Levator scapulae is elevator and the downward rotator of the scapula when the neck is stable but if the upper extremity is stabilized, it will produce neck bending to the same side and rotation of cervical spine. An increase in cervical lordosis, is often seen in forward head posture (FHP), will further increase the anterior shear forces it is force that push one part forward on the cervical vertebrae and may cause overactivity of the levator scapulae to stop these excessive anterior shear forces. Cervical spine is subject to the anterior shear forces. Cervical spine is subjected to the anterior shear forces as a result of lordosis and anterior line of gravity. The levator scapulae helps resist the anterior shear forces by producing posterior shear[(2)].



Levator scapulae syndrome is been identified by palpating the tenderness over insertion of levator scapulae muscle in position which allows to expose superomedial border of scapula the site of levator scapulae insertion. Generally on palpation there is specific point tenderness at the levator scapulae insertion[(2)].Forward head posture is been characterized by the increased flexion of the lower cervical spine and upper thoracic

region and increased extension of the upper cervical spine. It is associated with shortening of the upper trapezius and posterior cervical extensor muscles, sternocleidomastoid muscle and levator scapulae muscle. Each one inch anterior positioning of the head puts about 10lbs i.e., 4.5kg extra weight on the cervical spine[(2)]. A study on prevalence of forward head posture and its impact on activities of the daily living among students concluded that the prevalence of forward head posture in the students is about 73% and forward head posture affects the activity of daily living of the students to some extent[(2)].

Majority of population has been victimized by forward head posture that results in severe neck pain. With rise in popular social media and mobile gaming, more and more time is being spent on screens of mobile phones. Injuries are caused by strain. Forward head posture is caused by looking at a display that is below the eye level and that causes the head to lean forward, causing the anterior curve in upper thoracic vertebrae to be exaggerated which is true for both laptop screens and mobile screens. Individuals with the forward head posture are more likely to suffering from headaches, neck and shoulder pain. Resulting in limited range of motion and muscle strength in the neck and back region as well as weakness and tenderness of shoulder[(2)].

Fatigue and stress in neck and shoulders occur more easily with the use of the touch screen computers than with the desktops because small monitor devices such as smartphones and tablet, PCs cause the people to look down and slouch more than with the desktops. With the growing usage of smartphones for a long time can cause neck and back pain[(2)].Forward head posture is identified by measuring the craniovertebral angle. The craniovertebral angle is measured by calculating the angle made at the intersection of the line joining to the midpoint of the tragus of ear to the skin overlying the C7 spinous process and the horizontal line passing through the C7 spinous process. In this study if the angle was <500, the participant was consider to have forward head posture. The selection of 500 as a reference angle was guided by the studies of Diab and Mustafa and Yip et al, with the later reporting 55.02±2.86 as a normal range. Small angle indicates more forward head posture[(2)].

The study conducted by Salahzadeh et al, photogrammetric method was found to have a greater reliability to assess craniovertebral angle values as compared to observational method. A study by Muhammad Ali et al, states that female mobile gamers (55.6%) have the largest percentage of forward head posture, according to the descriptive analysis. Almost 74% of the individuals play for >3 hrs each day. Person correlation test showed positive correlation between the number of hours played and forward head posture[(2)]. 25 countries worldwide in terms of smartphone use. The age group of smartphone users varies, ranging from students and workers in their 20s to senior citizens who are over the age of 60. Smartphones provide various conveniences, such as sending and receiving e-mail, accessing the internet and engaging in entertainment, so the number of smartphone users has increased dramatically in recent years. With the growing use of smartphones, comes concerns of increased musculoskeletal problems, which are associated with intensive smartphone usage[(2)].

The most commonly reported biomechanical risk factors that include, among others, undue repetitions and the awkward postures. In past several years, numerous studies have reported that the positive correlation between musculoskeletal pain and smartphone use. As a result of that " text neck" which is the term for cervical spinal degeneration resulting from frequent Forward head flexion while looking down at the mobile devices, is becoming more common. The cervical region of the spine consist of the cervical vertebrae extending from (C1-C7) that is most position of the torso to the base of the skull. An intervertebral disc is located between the Cervical vertebrae and the occiput and functions as a shock absorber, meditating mechanical stress". Muscles head, ligaments, and bones support you while your neck moves. Anomalies, a condition that might cause neck pain or stiffness may be caused by inflammation. Neck pain and or discomfort are common complaints. It usually results from incorrect Sleeping habits or bad posture you may experience neck pain after a trauma. The occurrence of pain and discomfort in the neck region often starts as a painful sensation that result in restricting neck movement often term it as a stiff neck. Cause of neck pain include

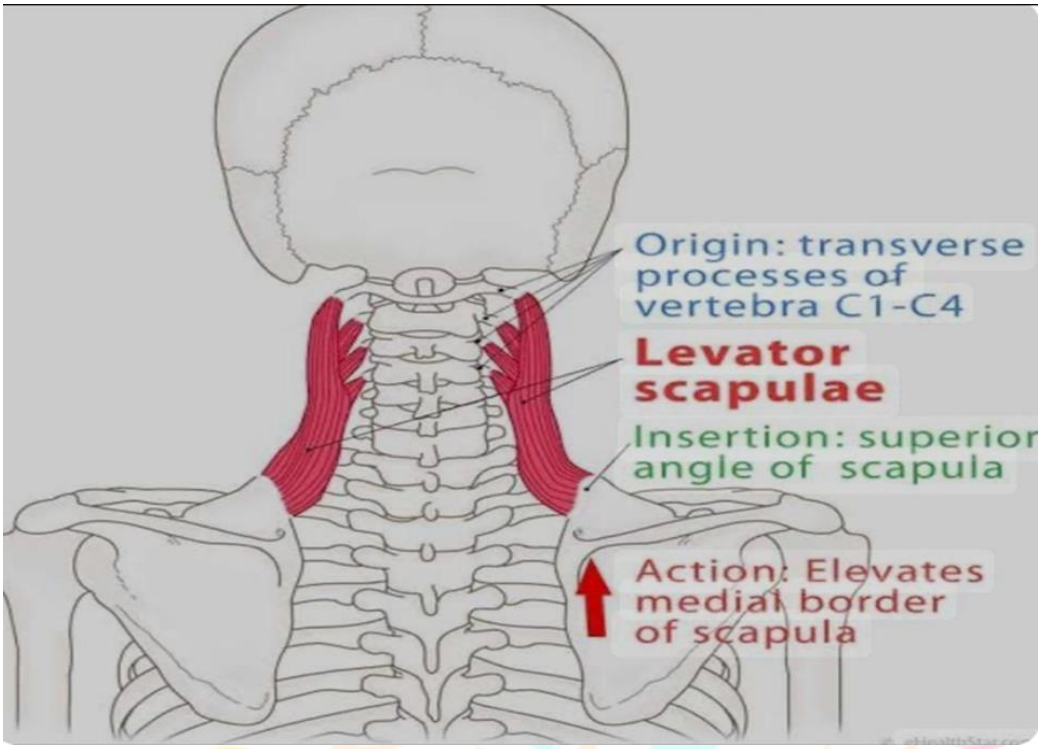
underlying diseases, injuries, muscle strain, and bad posture. The general symptoms of pain include stiffness, numbness, or sharp shooting pain, that worsens with movement and positioning[4].

The increased rate of cell phone usage and prolongation of using periods are responsible for increased neck muscle-related complaints. As a result, long-term fatigue, acute and chronic pain of the musculoskeletal system, and postural changes are detected in patients. If this condition is left untreated, it may be responsible for permanent changes such as flattening of the cervical spinal curve, spinal misalignment, and early spinal degenerations[4]. According to new research, youngsters who use their smartphones excessively suffer from poor sleep, less physical activity, obesity, headaches, and eye strain. The most popular posture for smartphone users is a flexed neck position, which could be dangerous for those using them. Smartphone use may cause neck muscle overuse, which can lead to discomfort and fatigue in extended static positions. Moreover, neck pain and musculoskeletal problems may develop because of excessive neck muscular exhaustion. The amount of time to use a smartphone to decrease the risk of MSK problems has been shown in only one study. Kim SY. et al in their study conducted in 2016 suggested that smartphone users should not use their phone device for more than 20 minutes in case they want to reduce muscle fatigue and spasms in the neck region. Only young adults with upright head postures participated in the study. The study findings claimed that using a smartphone for even 10 minutes can cause neck pain and discomfort[4].

In the post-pandemic era, the significance of digital platforms and mobile phones in the daily lives of university students is on the rise. It is well documented that digital platforms and mobile phones were expanded in universities following the onset of the pandemic. This is the evidenced by the fact that the average of daily mobile phone usage time has increased. Recent research indicates a correlation between increased mobile phone use and a rise in cases of neck pain. A systematic review of the literature examining risk factors for neck pain in university students revealed a strong association between long-term use of electronic devices and the development of neck pain. The study indicates that the prolonged use of electronic devices, exceeding three hours per day, represents a significant risk factor[5].

Long-term usage of mobile phones can lead to development of the fixed head and neck positions, placing increased pressure to the neck muscles and spine. With the increasing prevalence of mobile phone usage in the contemporary era, the likelihood for posture deterioration may increase as muscle receptors adapt to this new situation[5]. Frequent tilting of the head forward to look at a mobile phone can cause excessive tension and strain in the neck muscles. Prolonged use of mobile phones can increase pressure on the discs and ligaments between the cervical vertebrae, leading to the development of neck pain over time. The forward head position can cause a flexion posture in the cervical and thoracic regions, leading to muscle imbalance[5].

Static activities of the upper extremity while maintaining this posture, such as using a mobile phone, may further increase neck pain. Furthermore, non-ergonomic posture habits formed due to long-term mobile phone use may also contribute to increased neck pain. There is insufficient evidence in the literature on the relationship between neck muscle endurance and duration of phone use among the causes of neck pain in university students[5].



NEED OF THE STUDY

The most common pathology of the levator scapulae muscle is termed as "Levator Scapulae Syndrome". With the increasing popularity of mobile phones and the addictive behavior of the social media and games the clinical research in mobile phone users has increased in recent years. While using the mobile phones the cervical is positioned in greater flexion movement which increases the anterior shear forces acting on the cervical vertebrae. Forward head posture puts increased tension on levator scapulae muscles to contract for cervical extension in elongated position(2). The previous study states that levator scapulae muscle often becomes tense and painful leading to reduced motion in that area. As Now a days use of mobile is increasing on daily basis in every age group. Use of mobile in same position for prolonged period without adequate breaks, So people often adopt flexed neck position(2).

This overuse of mobile phone in incorrect posture lead to cervicogenic headache, migraine, stiffness of neck muscle. So this study will be aimed to find out the percentage of Levator scapulae Syndrome in population who use mobile phones on daily basis.

3.1Population and Sample

In this cross sectional study 117 male and female students between the age group of 18-25 years were included by using convenient sampling method. There cervical ranges were measure by (Goniometer). Severity of pain was assessed by using visual analogue scale (VAS), levator scapulae syndrome was assessed by palpating tenderness over supermedial border of scapula by tenderness grading. Individuals Were previous neck-head trauma, History of surgical intervention in the neck area,Cervical disc disease with radiculopathy, Subject who had recent major accident or surgery in cervical area were excluded from the study.

RESEARCH METHODOLOGY

- **METHODOLOGY**

- Study design: Cross sectional study.
- Sample size: 117
- Study set up: TMV college.
- Study duration: 6 months.

- Type of sampling: Convenient Sampling.

➢ **MATERIALS**

- Pen
- Paper
- Consent Form

➢ **INCLUSION CRITERIA**

1. Age 18-25 years[(2)].
2. Male and Female will be included[(2)].
3. People using mobile for 4-5 hrs/day[(3)].

➢ **EXCLUSION CRITERIA**

1. Were previous neck-head trauma[(3)].
2. History of surgical intervention in the neck area[(3)].
3. Cervical disc disease with radiculopathy[(4)].
4. Subject who had recent major accident or surgery in cervical area[(4)].

AIM AND OBJECTIVES

AIM

To find the percentage of Levator scapulae syndrome in mobile phone users.

OBJECTIVES

- To determine the intensity of pain in mobile phone users using Visual Analogue Scale (VAS)
- To determine the prevalence of levator scapulae syndrome in mobile phone users using Goniometer measurment.

OUTCOME MEASURES:

1.Goniometer

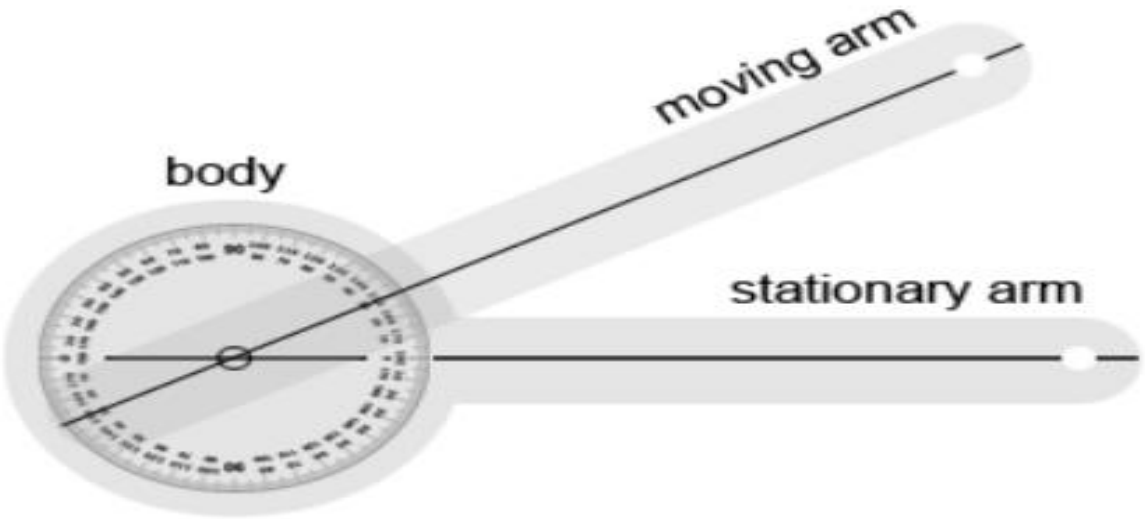
-Reliability- 0.98

Reliability depends on the joint and motion being assessed but generally the universal goniometer has been shown to have good to excellent reliability, and is more reliable than visual estimation especially with inexperienced examiners.

Overall, research shows high intra- and inter-rater reliability of the universal goniometer, with reliability in non-expert examiners improved with clear instructions on goniometric alignment, therefore where possible the same therapist should perform all measures to improve accuracy. Evidence is mixed on the number of measures to take, or whether taking an average of repeated measures improves assessment.

-Validity- 0.97

The purpose of goniometer is to measure the angle created at a joint at the adjacent bones of the body. Therefore, a valid goniometer measurement is one that represent the actual joint and one that can provide data for use in clinical decision making.



2.Visual Analogue Scale (VAS)

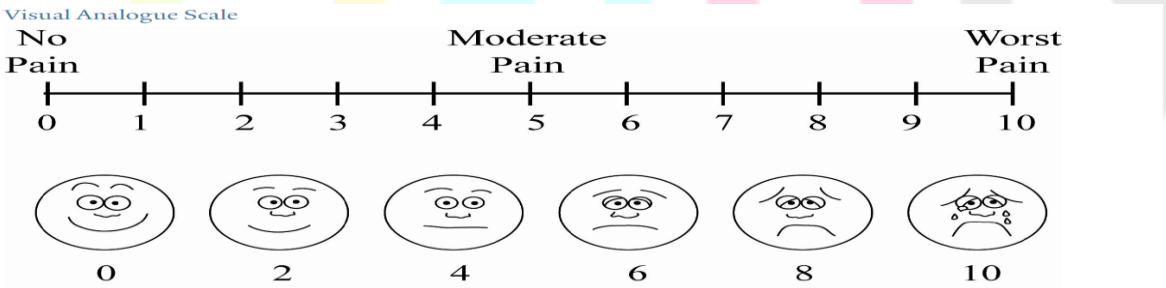
It is a pain rating scale which allow the patient to visually know the amount of pain along a solid 10- cm line. Scores are based on self-reported measure of symptoms that are recorded with a single handwritten mark placed at one point along the length of line that represent a continuous between two ends of scale "no pain" an left end (0cm) and "unberable pain" on right end of Scale (10).

- Reliability

Test–retest reliability has been shown to be good, but higher among literate (r= 0.94, P= 0.001) than illiterate patients (r = 0.71,P= 0.001) before and after attending a rheumatology outpatient clinic. High reliability when it is used for acute abdominal pain and ICC = 0.99 [95%CI 0.989 to 0.992][18], and moderate to good reliability for disability in patients with chronic musculoskeletal pain.

- Validity

In absence of the gold standard for pain, criterion validity cannot be evaluated. For construct validity, in patients with a variety of rheumatic diseases, the pain VAS has been shown to be highly correlated with a 5-point verbal descriptive scale ("nil," "mild," "moderate," "severe," and "very severe") and a numeric rating scale (with response options from "no pain" to "unbearable pain"), with correlations ranging from 0.71–0.78 and 0.62–0.91, respectively). The correlation between vertical and horizontal orientations of the VAS is 0.99.



PROCEDURE

Ethical committee clearance and permission was obtained from TMV's Jayantrao Tilak College of Physiotherapy. Participants were included according to the inclusion and exclusion criteria and consent was taken from the subjects by signing the consent form. Procedure was explained to the subjects. After filing the consent form the assessment proforma was filled. Subjects were assessed for levator scapulae syndrome by taking the ranges of cervical flexion and cervical side flexion pain was assessed by using Visual Analogue

Scale (VAS) and Levator Scapulae Syndrome was assessed by palpating tenderness over supermedial border of scapula and was filled accordingly. Data was collected and Statistical analysis was done.

✓ Measuring the cervical Flexion range of motion by goniometer.

Motion occurs in sagittal plane around a medial lateral axis. The mean cervical flexion ROM measurement with a universal goniometer is about 40 degree in adult[(12)].

- Testing Position

- Place the individual in the sitting position, with the thoracic and lumber spine well supported against the back of a chair.

-Ask the individual to tuck the chin in towards the chest and bend the head forward.

-Goniometer Alignment center fulcrum of the goniometer over the external auditory miatus.

-Align proximal arm so that it is either perpendicular to the ground or parallel to the ground.

-Align distal arm with the base of the nose[(12)].

✓ Measuring the cervical side flexion to the contralateral side range of motion by goniometer.

Motion occurs in the frontal plane around an anterior-posterior axis. The mean cervical lateral flexion ROM to one side, measured with a universal goniometer is about 22 degrees in adult[(12)].

- Testing position

-The individual also should be carefully positioned by being seated in straight back chair with the mid-back region in contact with the back of the chair.

-Stabilize the shoulder girdle and chest to prevent lateral flexion of the thoracic and lumber spin.

-Direct to the individual that try to touch the ear to the shoulder without moving the head forward.

-Goniometer Alignment center fulcrum of the goniometer over the spinous process of the C7 vertebra.

-Align proximal arm should be in spinous processes of the thoracis vertebrae so that the arm is perpendicular to the ground.

-Align distal arm with the dorsal midline of the head, using the occipital protuberance for reference[(12)].

Fig 1: Cervical side flexion to the Right

Fig 2: Cervical side flexion to the Left

Fig 3: Cervical Flexion

Fig 4: Cervical Flexion

DATA ANALYSIS AND INTERPRETATION

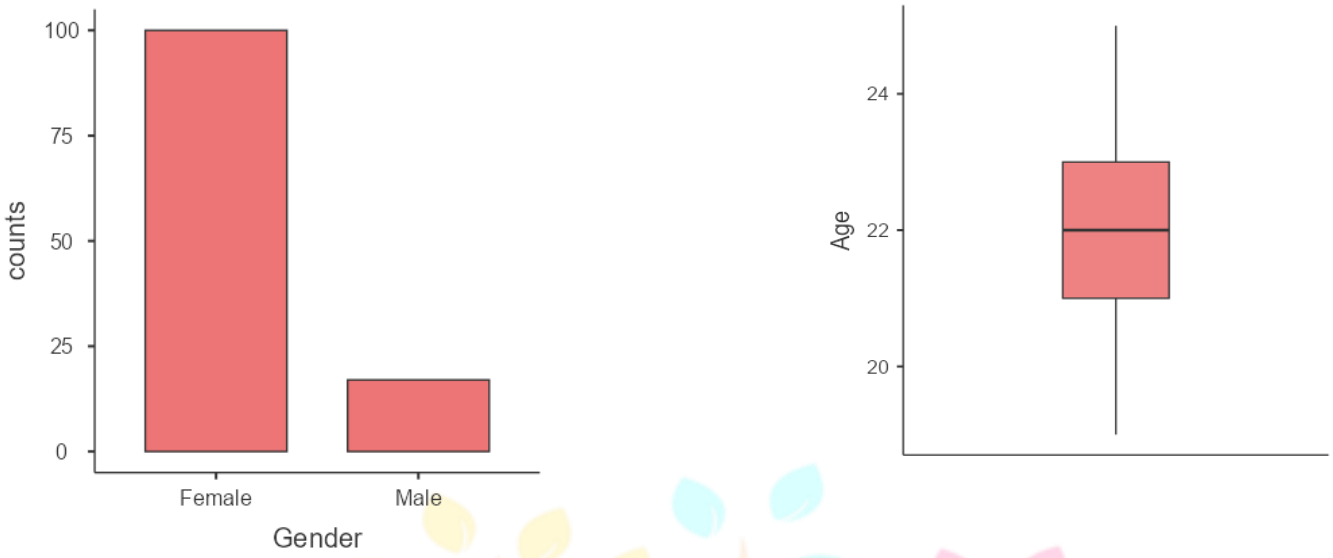
Statistical analysis was carried out using descriptive and frequency methods using Unpaired t-test and software used in analysis was SPSS 22.0 version and $p<0.05$ is considered as level of significance.

Table 1. Demographic Characteristics of Participants (N = 117)

Variable	Mean ± SD	Median	Range
Age (years)	21.8 ± 1.48	22	19–25
Mobile phone use (hours/day)	4.6 ± 0.87	5	3–8

Gender	Frequency	%
Female	100	85.5
Male	17	14.5

Graph 1: Demographic Characteristics of Participants (N = 117)

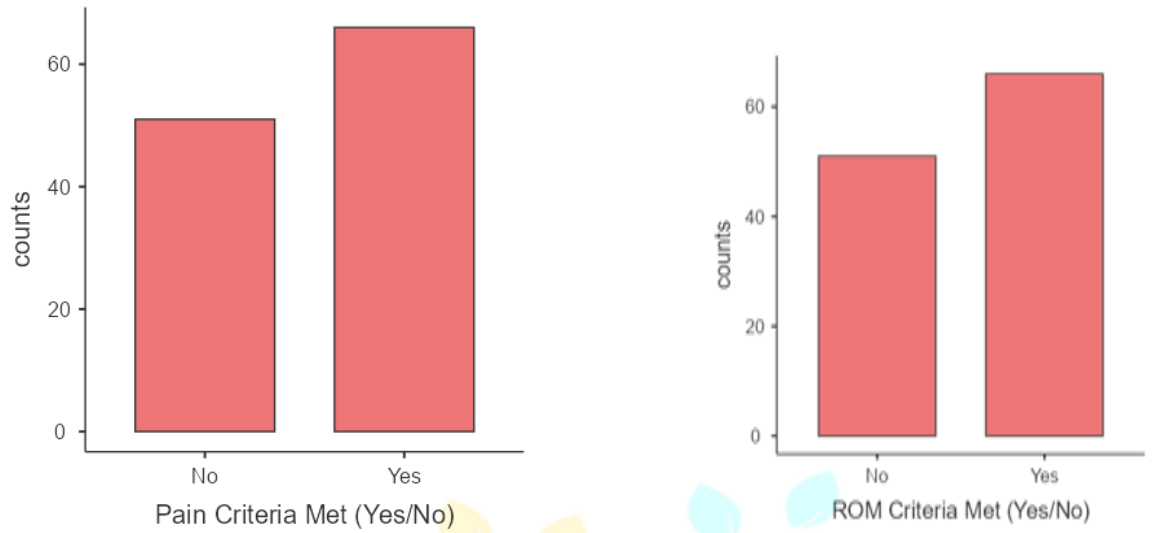


Interpretation: The study sample comprised 117 young adults with a mean age of 21.8 years, predominantly females (85.5%). Average mobile phone usage was 4.6 hours per day, indicating moderate to high daily exposure.

Table 2: Cervical Range of Motion and Pain Scores.

Outcome Measure	Mean ± SD	Median	Range
Cervical Flexion ROM (°)	37.8 ± 5.55	37	24–49
Cervical Side Flexion Right (°)	29.2 ± 6.77	30	17–42
Cervical Side Flexion Left (°)	28.6 ± 7.34	28	14–41
VAS Pain Score (0–10)	3.53 ± 1.48	4	0–6

Graph 2: Cervical Range of Motion and Pain Scores.

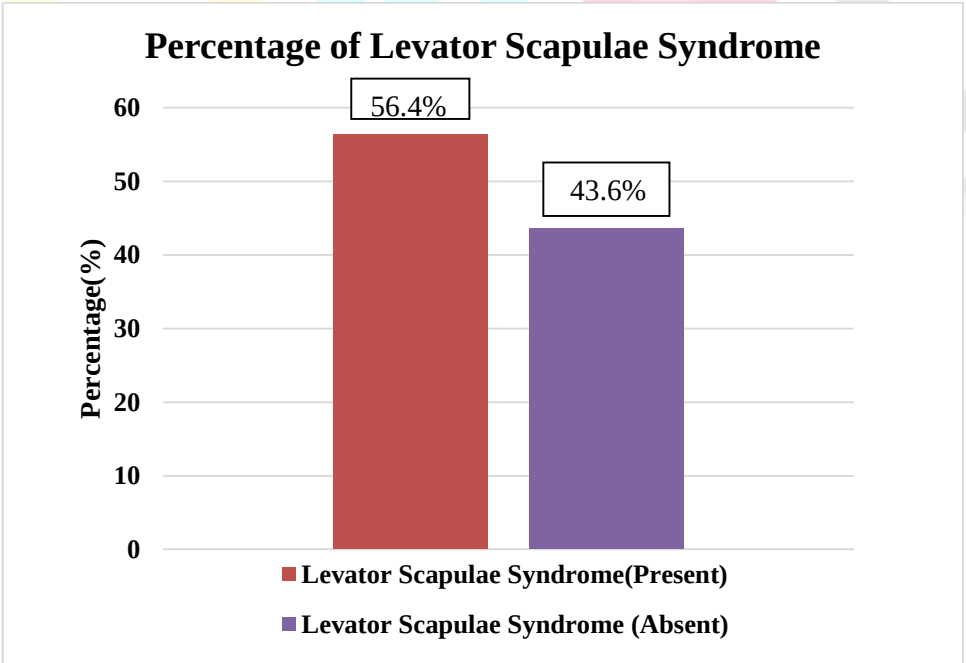


Interpretation: The mean cervical flexion and side flexion ranges were slightly below normal reference values, suggesting mild motion restriction in frequent mobile phone users. Mean VAS score of 3.5 reflects mild to moderate discomfort in the cervical region.

Table 3: Frequencies of Levator Scapulae Syndrome (Present/ Absent).

Variable	Frequency	%
Levator Scapulae Syndrome(Present)	66	56.4
Levator Scapulae Syndrome (Absent)	51	43.6

Graph 3: Percentage of Levator Scapulae Syndrome.



Interpretation: A total of 56.4% of participants showed both restricted range of motion and pain indicative of Levator Scapulae Syndrome. The condition was absent in 43.6%, establishing a moderate prevalence among regular mobile phone users.

IV. RESULTS AND DISCUSSION

4.1 Results of Descriptive Statics of Study Variables

The study included 117 participants with a mean age of 21.8 years (range 19–25 years), of whom 85.5% were females and 14.5% males. The mean duration of mobile phone usage was 4.6 ± 0.87 hours per day. The mean cervical flexion range of motion measured by goniometer was 37.8° ± 5.55, while mean cervical side flexion was 29.2° ± 6.77 to the right and 28.6° ± 7.34 to the left. The mean Visual Analogue Scale (VAS) score for pain was 3.53 ± 1.48. Frequency distribution revealed that 56.4% of participants met the restricted ROM criteria and 56.4% reported significant pain. Based on combined criteria, the prevalence of Levator Scapulae Syndrome was found to be 56.4%, whereas 43.6% of participants were classified as free of the condition. Gender-wise analysis indicated that males had slightly higher cervical ROM values compared to females, while VAS scores were marginally higher in females. These findings confirm that more than half of the mobile phone users assessed demonstrated both pain and reduced cervical motion consistent with Levator Scapulae Syndrome, fulfilling the aim and objectives of the study.

4.2 DISCUSSION

This study was aimed to find out the levator scapulae syndrome in mobile phone users by using Goniometer and VAS Scale. The study involved 117 participants. Male were 17 and female were 100. Levator Scapulae Syndrome is pain over the upper medial angle of the scapulae[(1)].Levator Scapulae pain in one of the most common general muscle complains. The levator scapulae originates from the transverse processes of C1,C2,C3 and C4 vertebrae. And it inserts into the medial aspect of the superior angle of the scapula. The main function of Levator Scapulae is to elevate your shoulder and rotating the scapula downwards[(1)]. The mobile phone has become an increasingly indispensable tool it is essential in our daily lives. Its use is now so pervasive that it serves as the primary means of conducting many activities, particularly in the wake of the pandemic. The pandemic has led to an increase in mobile phone usage among students who take university courses on digital platforms and in their socialization environments. This increase is due to the reliance on digital platforms for studies[(4)].

As the duration of mobile phone use increases with neck pain being especially common. This study examined that the relationship between the neck pain, mobile phone usage time and addiction, and the neck muscle endurance. The findings indicate the levator scapulae syndrome. There is a body of literature indicating that the duration of mobile phone use is associated with an increased prevalence of levator scapulae syndrome, a recent study has demonstrated that extended mobile phone use, may contribute to the development of neck-related discomfort and pain, which is believed to be influenced by biomechanical factors. It was reported that the duration of phone usage was associated with neck pain, and that university students increased their phone usage for reasons such as browsing social media and playing games[(4)].

The results of our study indicate a significant relationship between levator scapulae syndrome and phone usage duration. As the duration of phone use increases, the severity of neck pain also increases. According to reports, students spend an average of 4–5 hours per day on their phones. However, in our study, it was found that the usage time was slightly more than 4 hours[(4)].

It should be noted that this study has certain limitations. Firstly, it did not record the usage time of the other electronic devices, such as laptops, tablets and the gaming consoles, in addition to the mobile phone use. Consequently, it is not possible to ascertain the impact of these devices on levator scapulae syndrome.

Secondly, the study did not collect data on the proportion of students' usage hours spent with increased neck flexion, given that the average daily usage time for mobile phone was for four hours[4] .

In addition to previous studies, the present study found that a majority of 85.50 percent of the participants experienced neck pain, indicating a significant correlation between neck pain and smartphone use duration. This finding was identified varying proportions of pain severity based on the usage of the phone. This discrepancy in results might be due to the difference in the population characteristics, selection criteria, pain perception, and threshold[3].

This study identified a significant prevalence of levator scapulae syndrome (LSS) among student, with 56.40 % of participants, highlighting the occupational health risks associated with repetitive tasks and static postures prevalent in this profession. The findings align with previous studies that have reported high rates of musculoskeletal disorders, including neck pain and LSS, among mobile phone users[1] . The longer use of mobile phone study suggests that cumulative exposure to the ergonomic challenges of student using mobile phone contribute to the development of LSS. The study also demonstrated levator scapulae syndrome as assessed by the visual analogue scale (VAS) and goniometer measurement. Participants who positive experienced moderate to severe pain, underscoring the impact of LSS on the quality of life and functional capacity of student using mobile phone[1].

These findings are consistent with research indicating that individuals with musculoskeletal disorders often report high levels of pain and functional impairment, which can adversely affect their productivity and overall well-being[1] .

LSS could play a crucial role in mitigating its impact on the health and occupational performance of student using mobile phone .One strength of this study was the use of validated assessment tools, such as the VAS and Goniometer measurement , which provided reliable measures of pain and ROM . The study's cross-sectional design allowed for the examination of prevalence and associations, offering valuable insights into the relationship between work-related factors and LSS among student using mobile phone[1].

However, the cross-sectional nature also presented limitations, such as the inability to establish causality between variables. Additionally, the study's reliance on self-reported data for pain and ROM may have introduced reporting bias, potentially influencing the accuracy of the findings. The study's findings emphasize the need for ergonomic interventions and preventive strategies when using mobile phone to reduce the prevalence of LSS and related musculoskeletal disorders. Implementing educational programs on proper posture, the use of ergonomic equipment, and the incorporation of regular breaks and stretching exercises could help mitigate the risk factors associated with LSS[1]. Additionally, future research should consider proper posture while using mobile phone to explore the causative relationships between using mobile phone and LSS, as well as the effectiveness of specific interventions in reducing the incidence of musculoskeletal disorders among student using mobile phone[1].

Prolonged mobile use: extended period of using mobile by looking down or using it in inadequate posture the neck can strain the levator scapulae musclePoor posture: Forward head posture in individual can contribute to development of levator scapulae syndrome.Duration of mobile usage: Inadequate rest break between the mobile usage, can leads to levator scapulae syndrome.The results of our study indicate a significant relationship between levator scapulae syndrome and phone usage duration. As the duration of phone use increases, the severity of neck pain also increases. According to reports, students spend an average of 4–5 hours per day on their phones. However, in our study, it was found that the usage time was slightly more than 4 hours.

CONCLUSION

In this study, the prevalence of levator scapulae syndrome in mobile phone users was found 56.40%, Which can be attributed to excessive flexion of the neck. The finding underscore the importance of addressing ergonomic practices and posture to mitigate the risk of levator scapulae syndrome among the young population.

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