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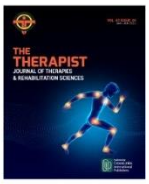

Original Article

Correlation of Scapular Position and Neck Pain Among Auto Drivers

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ABSTRACT

Non-specific neck pain is another name for mechanical neck discomfort. It is agony that is increased by activity, relieved by rest, and is not caused by a major underlying condition. The neck, shoulder, and lower back are the most commonly reported musculoskeletal system issues among drivers. Non-neutral spinal postures, such as a reduction in neutral lumbar lordosis and increased or reduced neck flexion, characterize the driving sitting position. **Objective:** To find out the association of neck pain and scapular position among auto drivers. **Methods:** It was a cross sectional study. Data was collected by 160 auto drivers on basis of inclusion and exclusion criteria. VAS was used for pain intensity and distance between scapula and spinous process was measured by Vernier caliper. IBM SPSS version 21.0 was used to enter and analyze data. Descriptive statistics was given in form of mean and standard deviation. **Result:** The results of current study showed that the mean value of scapular protraction of right side when hands at rest was 6.96, when hands on hip was 7.56 and when 90-degree glenohumeral abduction with internal rotation was 7.19. For visual analog scale scoring for right side when hands at rest the mean score was 5.84 and when hands on hip it was 6.84, and when 90º degree abduction the score was 6.44. When we discuss about the scapular protraction for the left side when hands were at rest the mean value was 6.87 and when hands on hip it was 7.53 and 90º glenohumeral abduction with internal rotation was 7.5. Similarly, VAS scoring for left side hands at rest is 5.61, for hands on hip was 6.65 and 90º glenohumeral abduction. **Conclusions:** According to this study, there is a substantial variation in hand size in three distinct postures among drivers who worked for lengthy periods of time in an aberrant posture. When the hand is positioned at the hip, scapular protraction is significant, and the VAS for neck discomfort is high on both the right and left sides.

INTRODUCTION

Non-specific neck pain is another name for mechanical neck discomfort. It's pain that gets worse with activity, gets better with rest, and isn't caused by a major underlying condition. The neck, shoulder, and lower back are the most commonly reported musculoskeletal system issues among drivers. Non-neutral spinal postures, such as a reduction in neutral lumbar lordosis and increased or reduced neck flexion, characterize the driving sitting position [1]. Many people nowadays tend to maintain a posture that promotes neck and shoulder strain. When a position is held for an extended amount of time, the muscles involved in holding the position are loaded and fatigued [2].

The scapula, often known as the shoulder blade, is located 2 inches from the midline on the posterior thorax, between the second and seventh ribs. Internally rotated from vertical, the scapula is rotated upwards 10 to 20 degrees from vertical [3]. The practice of continually holding a suboptimal position leads to muscular lengthening and, as a result, structural muscle weakening. Janda called this upper-crossed syndrome, and said that it produces round shoulders, forward head posture (FHP), and other problems. [4].

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Scapular asymmetry has a negative impact on the position of the cervical joints, resulting in neck discomfort. The alignment of adjacent body components may be harmed by a round shoulder or FHP. Because it is not directly attached to the trunk but is held in place mostly by muscles, the scapula may be damaged by aberrant alignment of surrounding body components or muscular injuries [5]. Neck joints can be held in unusual postures, resulting in joint discomfort and muscular weakness. As a result, one may feel that simply holding up one's head is difficult, that the head feels heavy, and as a result of this heavy sensation, one may retain a slouched posture, perpetuating the vicious cycle [6]. Neck ache is a frequent musculoskeletal problem in the adult population, with a 12-month frequency of 30 percent to 50 percent. Scapular dysfunction is one factor that has been linked to the development of neck discomfort [7].

Scapular dysfunction is a word that refers to the scapula's aberrant posture and/or movement.

Scapular dysfunction is frequently defined in terms of "abnormal scapular posture at rest" and "abnormal scapular motion during upper-limb tasks," which are sometimes referred to as "scapular dyskinesia" [8]. Scapular dysfunction's importance in neck discomfort is now determined more by clinical assessment and extrapolation from shoulder research than by direct scientific proof. Few studies have looked at the link between scapular dysfunction and neck discomfort, compared to shoulder problems such sub acromial impingement [9]. Although it is simple to apply knowledge gained from shoulder diseases to neck illnesses, this can be deceptive since there may be significant disparities in scapular function and subsequent therapy across both patient populations [10, 11].

Changes in scapular position/motion may differ between dominant and non-dominant scapula, and may be depending on the kind of neck problem (traumatic or non-traumatic) [12, 13].

The drivers often begin their voyage appropriately by leaning forward. After a few minutes, the body bends forward, the shoulders scrunch up, and the hip flexors and gluteal muscles get overworked. This posture might be due to tension, ocular strain, or just habit [14, 15]. Vincent et al. discovered a link between scapular posture and neck discomfort in truck drivers. There is a substantial difference in hand position between the three positions. In three distinct hand postures, the scapular protraction measurement and VAS (right and left) are taken [1]. Hands resting on the table [2]. Put your hands on your hips [3]. Internal rotation with hands in 90-degree abduction. The scapular protraction is measured with a vernier caliper. Scapular protraction and VAS for neck discomfort (right and left) are low when hand is at rest, high when hand is in hip, and low when hand is in 90-degree abduction with internal rotation, depending on the analysis [16] [17].

JP Canerio, P O'Sullivan, A Burnett, and others (2010) Various sitting positions have different effects on head/neck posture and muscular activation. According to this study, non-neural spinal postures such as a decrease in natural lumbar lordosis and an increase or decrease in neck flexion define the driving sitting position [18, 19]. LBP is frequent among three-wheeler drivers in Sri Lanka, according to research by Noda et al. long work hours and two-stroke engines have also been associated to LBP. This study's findings imply that educational, behavioral health, and policy initiatives might be beneficial in avoiding and lowering LBP among these drivers [20].

METHODS

It was a cross sectional study. Convenient sampling technique was used to collect data. Study was completed in four months after the approval of synopsis. Data was collected by 160 auto drivers on basis of inclusion and exclusion criteria. First consent form was given to respondents. After taking consent the data was collected by questionnaire. VAS was used for pain intensity and distance between scapula and spinous process was measured by Vernier caliper. Auto drivers having age between 25 – 45 and working at least of 8 hours or more than 8 hours daily and having three years of experience minimum were included in this study. Those who had congenital abnormality and trauma or recent injury were excluded from this study. The neck pain was measured by visual analog scale with three different hand positions These three different hand placement positions were: Hands at rest (both right and left), Hands at hip (both right and left), Hands in 90 degree of abduction with internal rotation (both right and left) [21].

The scapular protraction (left and right) measurement was also performed at above three positions. The measurement was performed by using Vernier caliper. The space between the inferior angle of the scapula and the neighboring spinous process provided scapular protection on both sides. The Outcome measures were Visual analogue scale. and Scapular positions. Data was entered and analyzed using IBM SPSS version 25.0. Results was given in form of mean and standard deviation.

RESULTS

The results of current study showed that the mean value of scapular protraction of right side when hands at rest was 6.96, when hands on hip was 7.56 and when 90-degree glenohumeral abduction with internal rotation was 7.19 (Table 1). For visual analog scale scoring for right side when hands at rest the mean score was 5.84 and when hands on hip it was 6.84,

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and when 90º degree abduction the score was 6.44. When we discuss about the scapular protraction for the left side when hands were at rest the mean value was 6.87 and when hands on hip it was 7.53 and 90º glenohumeral abduction with internal rotation was 7.5. Similarly, VAS scoring (Figure 1) for left side hands at rest is 5.61, for hands on hip was 6.65 and 90º glenohumeral abduction.

Variables	Right side		Left side	
	Mean	SD	Mean	SD
VAS value when hand in rest	5.84	0.734	5.61	0.663
VAS value when hand in hip	6.84	1.14	6.64	1.09
VAS value when hand in 90-degree abduction with internal rotation	6.44	0.895	5.94	0.93
Scapular protection when hand in rest	6.96	1.047	6.87	1.126
Scapular protection when hand in hip	7.56	1.12	7.52	1.152
Scapular protection when hand in 90-degree abduction with internal rotation	7.19	0.94	7.15	0.992

Table 1: Summary Of Data Analysis

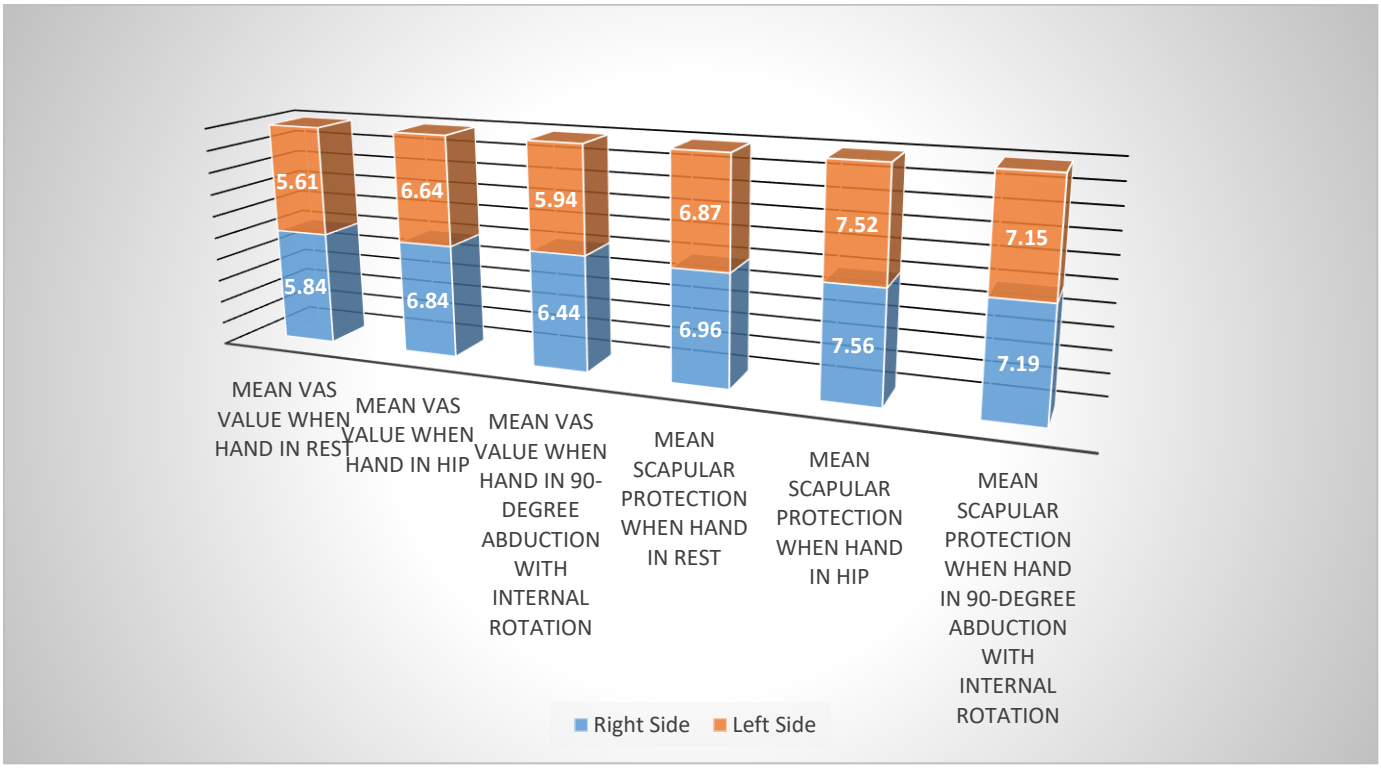

Figure 1: Summary of Data Analysis

DISCUSSION

According to this study, there is a substantial difference in hand position and neck discomfort in three distinct scapular postures. The mean value of scapular protraction of the right side when hands were at rest was 6.96, when hands were on hips was 7.56, and when 90-degree glenohumeral abduction with internal rotation was 7.19, according to the findings of the current study. For visual analog scale scoring for right side when hands at rest the mean score was 5.84 and when hands on hip it was 6.84, and when 90º degree abduction the score was 6.44. When we discuss about the scapular protraction for the left side when hands were at rest the mean value was 6.87 and when hands on hip it was 7.53 and 90º glenohumeral abduction with internal rotation was 7.5. Similarly, VAS scoring for left side hands at rest is 5.61, for hands on hip was 6.65 and 90º glenohumeral abduction. The findings of the current investigation revealed that there is a considerable variation in the positioning of the hand in three distinct positions, and the scapula was measured.

The fact that neck pain from bad posture could be explained by the fact that in an upright position, the head is supported by spinal vertebrae, explains this possible explanation for the shift. When the head is flexed forward, the vertebrae do not provide as much support for the weight of the head, so the muscles, ligaments, and tendons have to work harder to keep the

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head in place. Because of the over-the-top spectacular work at hand necessary to maintain the head in position, the muscles and sensitive tissues require more time to heal. Because of the shortened posture, the front neck flexor muscles become feeble, and neural structures remain in less than optimum placements. The perpetual over-burden and fixing of delicate tissues may in the end bring about diminished blood stream and oxygen to the delicate tissue [22].

Because the auto drivers have to drive for long hours in bad posture, this poor posture can also have altered the scapular position. The poor posture includes protected shoulders and forward head posture as a result of this the thoracic kyphosis increase.

CONCLUSION

Neck discomfort is a common occurrence all over the world. Neck discomfort can sometimes result in physical impairment and high societal expenses. According to this study, there is a substantial variation in hand size in three distinct postures among drivers who worked for lengthy periods of time in an aberrant posture. When the hand is positioned at the hip, scapular protraction is significant, and the VAS for neck discomfort is high on both the right and left sides. The hand was then put in 90^{o} abductions with internal rotation as a result. When the hand is in the rest position, the scapular protraction and VAS for neck discomfort are at their lowest levels.

REFERENCES

1. Barr AE, Barbe MF. Inflammation reduces physiological tissue tolerance in the development of work-related musculoskeletal disorders. J. Electro. Kines. 2004. 14(1):77-85. doi: 10.1016/j.jelekin.2003.09.008
2. Lee S, Lee D, Park J. Effect of the cervical flexion angle during smart phone use on muscle fatigue of the cervical erector spinae and upper trapezius. J. Phy. thrpy. Sci. 2015. 27(6):1847-9. doi: 10.1589/jpts.29.921
3. Ariens GA, Mechelen Wv, Bongers PM, Bouter LM, Wal Gvd. Physical risk factors for neck pain. Scand. J. Work Envi. Hlth. 2000. 26(1):7-19. doi: 10.5271/sjweh.504
4. Kwon JW, Son SM, Lee NK. Changes in upper-extremity muscle activities due to head position in subjects with a forward head posture and rounded shoulders. J. Phy. Thera. Sci. 2015. 27 (6):1739-42. doi: 10.1589/jpts.27.1739
5. Ebaugh DD, McClure PW, Karduna AR. Three-dimensional scapulothoracic motion during active and passive arm elevation. Clin. Biomech. 2005. 20 (7): 700-9. doi: 10.1016/j.clinbiomech.2005.03.008
6. Dahiya J, Ravindra S. A study of neck pain and role of scapular position in computer professionals. In. J. Phy. Occup. Ther. Intern. J. 2014. 8(4):236-41. https://www.ijsr.net/get_abstract.php?paper_id=SUB154634
7. Hogg-Johnson S, Van Der Velde G, Carroll LJ, Holm LW, Cassidy JD, Guzman J, et al. The burden and determinants of neck pain in the general population. Euro. Spi. J. 2008. 17(1):39-51. doi: 10.1097/BRS.0b013e31816454c8
8. Kibler WB, Sciascia A. Current concepts: scapular dyskinesis. Bri. J. Spor. Med. 2010. 44(5): 300-5. doi: 10.1136/bjsm.2009.058834
9. Kibler BW, Sciascia A, Wilkes T. Scapular dyskinesis and its relation to shoulder injury. J. Ame. Acad. Orthop. Surg. 2012. 20(6):364-72. doi: 10.5435/JAAOS-20-06-364
10. Cagnie B, Struyf F, Cools A, Castelein B, Danneels L, O'Leary S. The relevance of scapular dysfunction in neck pain: a brief commentary. J. Ortho. Spo. Phy. Thera. 2014. 44 (6): 435-9. doi: 10.2519/jospt.2014.5038
11. HelgadoTTir H, Kristjansson E, Mottram S, Karduna A, Jonsson Jr H. Altered scapular orientation during arm elevation in patients with insidious onset neck pain and whiplash-associated disorder. J. Ortho. Spo. Phy. Thera. 2010. 40(12): 784-91. doi: 10.2519/jospt.2010.3405
12. Szeto GP, Straker L, Raine S. A field comparison of neck and shoulder postures in symptomatic and asymptomatic office workers. Appl. Ergono. 2002. 33 (1): 75-84. doi: 10.1016/s0003-6870(01)00043-6
13. Struyf F, Nijs J, Mottram S, Roussel NA, Cools AM, Meeusen R. Clinical assessment of the scapula: Rev. liter. Br. J. Spor. Med. 2014. 48 (11): 883-90. doi: 10.1136/bjsports-2012-091059
14. Kim YM. Effects of the use of the hold relax technique to treat female VDT workers with work-related neck-shoulder complaints. Kor. J. Occup. Envir. Med. 2009. 21(1):18-27. https://doi.org/10.13066/kspm.2013.8.3.433
15. Selvam PS, Arun B. A Study of Neck Pain and Role of Scapular Position in Drivers. In. J. Phy. Occup. Ther. Intern. J. 2016. 10(4): 174. doi:10.5958/0973-5674.2016.00141.6
16. Vincent Jeyaraj D ea. Correlation of the Scapular Position and Neck Pain in Auto Drivers. J. Physiother. Res. 2018. 2(No.1:2). https://www.imedpub.com/articles/correlation-of-the-scapular-position-and-neck-pain-in-auto-drivers.pdf

DOI: https://doi.org/10.54393/tt.v1i1.2

17. Lee S, Lee S. Mediating effect of coping behavior on the relationship between driving stress and traffic accident risk. Korean J. Indus. Organ. Psychol. 2011. 24: 673-93.doi.org/10.24230/kjiop.v24i4.673-693
18. Caneiro JP, O'Sullivan P, Burnett A, Barach A, O'Neil D, Tveit O, et al. The influence of different sitting postures on head/neck posture and muscle activity. Manu. ther. 2010. 15(1): 54-60.
19. Mansfield N, Sammonds G, Nguyen L. Driver discomfort in vehicle seats–Effect of changing road conditions and seat foam composition. App. Ergon. 2015. 50:153-9. doi: 10.1016/j.apergo.2015.03.010
20. Noda M, Malhotra R, DeSilva V, Sapukotana P, DeSilva A, Kirkorowicz J, et al. Occupational risk factors for low back pain among drivers of three-wheelers in Sri Lanka. Int. J. Occup. Envir. Hlth. 2015. 21(3):216-24. doi: 10.1179/2049396714Y.0000000071
21. Rehn B, Bergdahl I, Ahlgren C, From C, Järvholm B, Lundström R, et al. Musculoskeletal symptoms among drivers of all-terrain vehicles. J. Sound Vibr. 2002. 253(1):21-9. doi:10.1186/1471-2474-5-1
22. Bernhard B. A critical review of epidemiological evidence for work-related musculoskeletal disorders of the neck, upper extremity and low back. Musc. Disord. Workp. fact. 1997. 1-591. doi:10.26616/nioshpub97141