



Prevalence of Upper Crossed Syndrome among the Motorcyclists of Lahore

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ABSTRACT

BACKGROUND

Upper Crossed Syndrome (UCS) is a musculoskeletal condition that arises from a muscular imbalance characterized by tonic and weak muscle groups.

A growing population of young adults in our country frequently engages in motorcycling as an economical mode of transportation. Prolonged motorcycle riding, coupled with helmet use and poor road conditions, places continuous strain on the upper back of riders, which may contribute to the development of UCS. The pathophysiology of UCS involves a complex interaction between several muscles, including the upper trapezius, levator scapulae, pectoralis major and sub-occipital muscles. The tightness of the pectoralis major muscle contributes to the protracted and downward rotation of the scapula, while the weakness of the lower and middle fibers of the trapezius muscle results in an inability to retract the scapula and maintain proper postural alignment. The resulting muscle imbalance places increased stress on the cervical and thoracic spine, leading to chronic neck pain, headaches, and shoulder discomfort.

OBJECTIVES

The aims and objectives of this study are to determine the prevalence of Upper Crossed Syndrome among motorcyclists of Lahore.

METHODS

The study was conducted from February 2021 to May 2021. A total of 192 motorcyclists from Lahore in the age group 18-40 years were recruited through a convenient sampling method. Subjects were assessed based on the results of the Pectoralis major muscle tightness test and Trapezius weakness test. Visual analog pain scale and Oswestry neck disability index were administered to analyze the population. Data collected was analyzed using SPSS 22 considering a p-value of 0.05 significant.

RESULTS

Among 192 motorcyclists, 73 (~38%) were positive for Pectoralis major muscle tightness and 67 (~35%) were positive for Trapezius muscle weakness.

CONCLUSIONS

A significant prevalence of Upper Crossed Syndrome with neck pain being the major symptom, in motorcyclists of Lahore

KEYWORDS

1. Neck Pain, Pectoralis Muscle, Visual Analog Pain Scale

INTRODUCTION

The musculoskeletal system comprises bones, muscles, tendons, ligaments, and connective tissues that enable movement, maintain posture, and support body weight. With over 600 muscles, 206 bones, and other tissues, this complex system forms an interconnected network that facilitates daily physical activities. Its bones provide a rigid framework while muscles, tendons, and ligaments offer flexibility, making it an essential system for our movement and stability.

Musculoskeletal impairments can range in severity from mild to severe and can affect individuals of all ages, especially youth. These impairments can be caused by a variety of factors, including trauma, repetitive motion, age-related wear and tear, and genetic factors.

Musculoskeletal impairments can have a significant impact on posture. Poor posture can lead to a range of musculoskeletal impairments, including neck pain, back pain, shoulder pain, and headaches.

The term "Upper Crossed Syndrome" was first coined by the late Czech neurologist, Dr. Vladimir Janda, in the early 1970s. He observed that patients with chronic pain in the neck and shoulders tended to have similar patterns of muscle imbalance. [1] The condition has since been widely recognized by healthcare professionals and is commonly seen in individuals who spend prolonged periods sitting at a desk, driving, or using a computer. [2]

Upper Crossed Syndrome (UCS) is a common postural condition characterized by imbalances in the muscles of the neck, shoulders, and upper back, leading to chronic pain and dysfunction in the affected areas. [3]

In this condition, i.e., upper crossed syndrome, the snugness of the upper fibers of the trapezius muscle and the levator scapulae muscle present on the dorsal aspect intersect the weakness of both the pectoral muscle. The Frailty of important muscles of cervical flexion ventrally crosses with the inadequacy of the middle fibers and lower fibers of the trapezius muscle. [4] The syndrome is so named because a symbol X is drawn with either arm representing tightened and weakened structures.

Unfortunately, UCS, very similar to cardiac and vascular diseases, happens to be a "silent" disorder. It typically takes years to develop and at first causes no symptoms. Symptoms become apparent solely when UCS has created significant changes to the mechanics of the higher back, neck, shoulders, and jaws. [5]

Treatment for UCS involves a combination of manual therapy, stretching, and strengthening exercises. Manual therapy techniques such as myofascial release and trigger point therapy can help to release hypertonic muscles and restore mobility. Stretching exercises can help to improve the range of motion while strengthening exercises can address muscle imbalances and improve posture [6]

Because most of the young population in our country use a motorcycle as a means of transportation, the present study was undertaken to estimate (1) the prevalence of Upper Crossed Syndrome among motorcyclists of Lahore (2) study the relationship between the development of UCS and pectoral muscles tightness (3) study the relationship between UCS and trapezius muscle weakness (4) the extent of neck pain associated with UCS

SUBJECTS AND METHODS

This study is a six-month cross-sectional investigation that took place in the SSAHS Skills Lab. The sample size of 192 participants was derived using a convenient sampling technique, with the aid of the Epitools calculator. The confidence level was 95%, the significance level was 0.05, and the estimated prevalence was 14.6%.

The study included daily male motorcyclists aged between 18 and 40 years, with riding experience of over one year, and who rode motorcycles with a capacity of 150cc or less. The exclusion criteria encompassed individuals with malignancy linked to soft tissue and joints, congenital shoulder deformities, chronic illnesses, or co-morbidities like diabetes, hypertension, hematological problems, or vitamin deficiencies.

The study tools comprised manual muscle testing, the Oswestry neck disability index, and the Visual Analog Scale. Manual muscle testing examined numerous muscles such as the pectoralis major, and lower, and middle trapezius muscles, with each assessment lasting about 15 minutes.

SPSS version 22 was employed to conduct data analysis. The findings were expressed in frequencies for qualitative data and mean standard deviation for quantitative variables.

The study underwent approval from the institutional ethics committee at the synopsis level, and participants provided written consent. The study team ensured the confidentiality and dignity of participants were upheld throughout the examination

RESULTS

Data was collected from 192 subjects, ages ranging from 18 to 36 with an average mean age of 24.01 with a standard deviation of 3.685. 38% of the subjects, i.e. 73 out of 192 people exhibited a positive Pectoralis major tightness test (table 1). 34.9% of the subjects, i.e. 67 out of 192 people displayed a positive test for Lower and Middle Trapezius weakness (table 2). Disability scores on the Oswestry neck disability index ranged from 0 to 28, with a mean value of 5.2708 and a standard deviation of 5.9886. From all the required calculations, it was concluded that 18% of the study population was affected by Upper Crossed Syndrome.

Table 1: Pect. Major Tightness Test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	positive	73	37.8	38.0	38.0
	negative	119	61.7	62.0	100.0
	Total	192	99.5	100.0	

Missing	System	1	.5
Total		193	100.0

Table 2: Lower, Middle Trapezius Weakness Test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Positive	67	34.7	34.9	34.9
	Negative	125	64.8	65.1	100.0
	Total	192	99.5	100.0	
Missing	System	1	.5		
Total		193	100.0		

DISCUSSION

The primary objective of this study was to determine the prevalence of Upper Crossed Syndrome (UCS) among motorcyclists in the district of Lahore and to investigate the degree of neck pain associated with UCS. The study employed manual muscle testing, the Oswestry neck disability index, and the Visual Analog Scale to evaluate various muscles and assess disability.

The results of this study indicate that 38% of the participants had pectoral tightness, while 35% of the participants exhibited trapezius weakness. The prevalence of UCS was estimated to be 18%, which is consistent with previous research studies.

According to research conducted in an institute in Finland, almost 20% of the population showed neck and shoulder aches. In English countries, almost half of all MSK damages are work-related. [7]

Some studies have investigated the relationship between motorcycling and UCS. One study of competitive cyclists found that 75% of the participants experienced neck pain while cycling, and that neck pain was strongly associated with muscle imbalances, including tightness in the upper trapezius and weakness in the lower trapezius and deep neck flexors [8]

The prevalence of UCS is significant in other professions as well. For instance, a study conducted on physiotherapists concluded that 27% of participants were affected by UCS. Similarly, a study conducted on laundry workers found a prevalence of 28% of UCS, attributed to faulty posture and long working hours leading to neck pain and forward head and neck posture.

The prevalence of UCS has also been observed in other professions, such as desk workers (32.43%), drivers (924.325%), housewives (27.035%), and teachers (16.22%). The results of this study were consistent with previous research studies and highlighted the need for preventative measures and proper management of UCS among motorcyclists to improve their overall health and well-being.

RECOMMENDATIONS

It is recommended that (1) female riders should be included (2) Sample size should be increased (3) X-ray technique could be used for more precise results (4) Digital posture analysis tools should be used.

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