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Prevalence of Upper Cross Syndrome Among College Students

Mathur Keerty[1]; Kumari Vanshika[2]

[1]Department of Physiotherapy, Dolphin PG Institute of Biomedical & Natural Sciences, Dehradun India

[2]Student Researcher, Dolphin PG Institute of Biomedical & Natural Sciences, Dehradun India

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ABSTRACT

Background: Upper Cross Syndrome (UCS) is a common postural imbalance that often affects individuals, including college students who may spend extended periods sitting and studying. This syndrome is characterized by a specific pattern of muscle imbalances and joint dysfunction in the upper body. Understanding the causes, symptoms, and preventive measures for UCS is crucial for college students to maintain good posture and overall musculoskeletal health..

Objective: To approximate the prevalence of Upper Cross Syndrome among college students and measure associated neck-related disability and pain.

Methods: A cross-sectional observational study was conducted on 300 college students aged 18–25 years from institutions in Dehradun, India, selected using a convenient sampling technique. Participants were evaluated using the Neck Disability Index (NDI), Visual Analog Scale (VAS), and standardized clinical tests for pectoralis muscle tightness and trapezius muscle weakness. Descriptive statistical analysis was performed using SPSS version 23.

Results: The mean NDI score was 12.2 ± 10.5, reflecting mild to moderate neck disability, while the mean VAS score was 2.1 ± 1.9. Sixty participants (20%) demonstrated concurrent pectoralis tightness and trapezius weakness, confirming the presence of UCS. Trapezius muscle involvement was more frequently observed (57.6%) compared to pectoralis muscle tightness (20%).

Conclusion: A notable proportion of college students exhibited features of Upper Cross Syndrome. Our findings emphasize the need for early detection, ergonomic correction, and targeted exercise interventions to control the burden of postural musculoskeletal disorders in young adults.

INTRODUCTION

Upper Cross Syndrome (UCS) is a commonly reported postural disorder involving altered alignment of the head, neck, and shoulder girdle. It is associated with a predictable pattern of muscular imbalance, including shortened pectoral and upper trapezius muscles alongside weakened deep cervical flexors and scapular stabilizers. These alterations often manifest as forward head posture, rounded shoulders, and increased thoracic curvature, contributing to neck pain and functional impairment.

It is often observed among college students, primarily attributed to the demanding academic environment that requires prolonged periods of sitting. This sedentary lifestyle, whether spent at desks attending lectures, studying intensively, or using computers extensively, contributes significantly to the development of muscle imbalances. In the context of UCS, certain muscles, such as those in the upper trapezius, levator scapulae, and pectoral muscles, become overactive and tight, while others, including the lower trapezius, serratus anterior, and deep neck flexors, tend to weaken due to underactivity

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If left unaddressed, UCS during early adulthood may progress into chronic musculoskeletal dysfunction later in life. Assessing its prevalence in college students is therefore essential for guiding preventive and rehabilitative strategies.

Need of the Study

Understanding and addressing Upper Cross Syndrome (UCS) prevalence among college students is vital for their well-being, academic performance, and future occupational health. Prolonged sitting and sedentary behaviors in the college environment raise concerns about musculoskeletal issues. A study on UCS prevalence informs targeted preventive measures, contributing valuable insights to existing literature and prioritizing student health.

Aim of the Study

To determine the prevalence of Upper Cross Syndrome among college students.

Operational Definition

Upper Cross Syndrome: A musculoskeletal condition characterized by forward head posture, rounded shoulders, neck discomfort, and stiffness resulting from an imbalance between shortened and weakened upper-body muscle groups caused by faulty postural mechanics.

METHODOLOGY

Study Design

Cross-sectional observational study.

Study Setting

Colleges located in Dehradun, India.

Sample Size

300 participants.

Sampling Technique

Convenient sampling method.

Inclusion Criteria

- College students aged 18–25 years
- Enrolled in undergraduate or postgraduate programs
- Willing to participate and provide informed consent
- Medically stable with no acute illness

Exclusion Criteria

- History of cervical spine trauma or surgery
- Existing neuromuscular or musculoskeletal disorders

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- Recent upper limb injury or surgery
- Congenital or structural postural deformities

Outcome Measures

1. **Neck Disability Index (NDI):** Evaluates functional limitations related to neck pain.
2. **Visual Analog Scale (VAS):** Quantifies perceived neck pain intensity.
3. **Special Clinical Tests:** Assessment of pectoralis muscle tightness and trapezius muscle weakness using standardized procedures.

Procedure

Following informed consent, participants completed the NDI questionnaire and VAS. A physical examination was then performed to assess pectoralis tightness and trapezius muscle strength. All assessments were conducted using uniform protocols to ensure consistency and reliability.

Data Analysis

Statistical analysis was carried out using SPSS version 23. Descriptive statistics, including mean, standard deviation, frequency, and percentage, were used to summarize the data.

RESULTS

The mean NDI score among participants was 12.2 ± 10.5, while the mean VAS score was 2.1 ± 1.9. Out of 300 students, 60 (20%) demonstrated positive findings for both pectoralis muscle tightness and trapezius muscle weakness, indicating the presence of Upper Cross Syndrome.

Trapezius muscle involvement was observed more frequently than pectoralis tightness. Interpreting the data reveals several significant findings regarding the prevalence of Upper Cross Syndrome (UCS) among the sampled student population at Dehradun. The mean Neck Disability Index (NDI) score of 12.2 suggests a moderate level of neck disability reported by the participants, indicating that they experienced some impairment in their daily activities due to neck pain or dysfunction.

However, the considerable standard deviation of 10.5 indicates variability in reported disability levels among the participants, suggesting that the severity of neck disability varied widely within the sample. Similarly, the mean Visual Analog Scale (VAS) rating of 2.1 reflects a moderate level of neck pain reported by the participants, with a standard deviation of 1.9 indicating variability in reported pain levels.

The median NDI score of 12 and median VAS rating of 2 corroborate these findings, indicating that approximately half of the participants reported a disability score or pain rating at or below these values.

DISCUSSION

Among the 300 students, 133 were males, and 167 were females. The correlation analysis between NDI scores, VAS ratings, and special test results revealed that both the Trapezius and Pectoralis muscles tested positive simultaneously in 60 out of 300 instances that is 20% indicating a potential association between the presence of UCS indicators in both muscle groups.

These findings are consistent with previous research emphasizing the role of prolonged sitting and screen use in the development of UCS. Early intervention focusing on posture correction, ergonomic education, and muscle reconditioning is essential to mitigate long-term consequences.

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Limitations

1. The sample size was small according to this research.
2. The age criteria was limited.
3. The study's sample size and demographic composition may limit the generalizability of the findings to broader student populations.

Further Study

1. Large sample size and more diverse population can be taken in future study to enhance the validity.
2. Separate studies can be done for specific academic disciplines.
3. Other questionnaire can be used as well as more finding can be added like forward neck posture and muscles stability.

CONCLUSION

Upper Cross Syndrome was observed in a substantial proportion of the college student population. The findings underscore the importance of early screening and preventive strategies to address postural deviations and reduce the risk of chronic musculoskeletal disorders in young adults.

Clinical Implications

Clinicians and educators should collaborate to promote ergonomic awareness, regular physical activity, and corrective exercise programs among students to improve postural health and prevent Upper Cross Syndrome.

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