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"PREVALENCE OF MUSCULOSKELETAL DYSFUNCTION DUE TO BACKPACKS IN STUDENTS WITH UPPER CROSS SYNDROME"

Physiotherapy

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ABSTRACT

Background: Increasing rate of musculoskeletal dysfunction due to backpack is matter of concern. Prevalence varies regionally as it depends on many variables. Heavy backpack is one of the important underlying causes. Adolescent spine is in the critical stage of development in the age group of 07-15 years. This study was carried out to decide regional cutoffs of heavy relative weights of backpacks in male and female children. **Methodology:** For this survey, a sample of students from Ahmedabad's New Education School was used. Every student who satisfies the inclusion requirements is welcome to take part in the research. Through the semi-structured questionnaire, the data were collected. The length of the trip, the type of vehicle, and the distance traveled, the posture taken while traveling, and the level of pain were all mentioned in the questionnaires. Every outcome that was measured was obtained at baseline. NDI, SPADI & NPRS. **Result:** In present study we found that from total 60 students 34 students shows highest upper cross syndrome and students with upper cross syndrome were having mean pain score of NPRS 4.52±2.18 and disability as per NDI & SPADI as 50.79 &51.28.overall prevalence of musculoskeletal dysfunction is 55.66%. **Conclusions:** Majority of the School going students are exposed to the risk of adopting poor postures which can lead to musculoskeletal dysfunction. The results of this study suggesting the importance of postural awareness among school going students.

KEYWORDS

Upper Cross Syndrome, Neck Disability Index, Shoulder Pain And Disability Index, Musculoskeletal Disorder.

INTRODUCTION

The World Health Organization states that musculoskeletal disorders—which are primarily linked to Students and cause headaches and chronic neck pain, which are the most common complaints worldwide—are one of the main causes of disability among persons between the ages of 20 and 50. It is acknowledged that disabilities result in severe medical conditions as well as socioeconomic problems; the loss of GDP from absenteeism and low productivity has been estimated to be as high as 2%. Numerous studies found that almost 90% of rehabilitation specialists suffer from musculoskeletal conditions, with 50% of physiotherapists reporting a tendency to develop Work-Related Musculoskeletal Disorders (WMSDs) throughout the course of their five-year careers. This might be because of the nature of their employment, which entails extended periods of sitting, standing, and lifting as well as the use of manual techniques in academic or clinical settings. The high prevalence (66%) in lower limb, particularly in the low back and neck region (61%), may be related to their line of work, which involves extended standing, sitting, lifting, or using manual procedures in clinical or academic settings[1].

Upper Cross Syndrome (UCS), also known as cervical cross syndrome, is defined as a pattern of alternative tightness and weakness of the neck's Serratus Anterior, Pectorals Major, Levator Scapulae, Rhomboids, and Deep Flexors, especially the Scalene muscles. This pattern is thought to be caused by improper body ergonomics, poor work habits, or low self-esteem. Rather than only affecting one muscle, Upper Cross Syndrome is typified by an imbalance in the activation and inhibition of skeletal muscles. Muscular insufficiencies arise from any inability of the tonic and phasic muscles to activate coherently. Thus, the most common symptom of UCS is neck and upper back pain, which is typically diagnosed as Cervicogenic Vertigo with shoulder pathology in a number of patients. This bad posture causes hypnosis, forward head posture, loss of cervical lordosis, and some postural patterning of the front shoulders[2]. The upper portion of the body experiences general pattern changes as a result of these anomalies.

This pattern alteration results in strain to the shoulder blade and muscle attachments of the shoulder, giving the impression of a rounded shoulder. While extended use of this position does not always result in pain, people frequently report upper back and neck pain various factors including musculoskeletal structures, body changes regarding age, cultural customs, motor performances and occupation affects the head position of the person while sitting. The patients may develop forward head posture because of this poor sitting posture along with rounded shoulder which occurs due to the increased hypnosis in thoracic region[2].

When seated, the forward head position causes the upper cervical region to extend, the lower cervical region to flex, and the shoulders to round. This reduces the length of muscle fibers on average, which causes extensor torque around the upper cervical region's joints. This aberrant state leads to a number of musculoskeletal problems, such as increased internal rotation, anterior tilt, and decreased scapular upward rotation. It makes it even harder to keep an erect posture[3].

Upper crossed syndrome is what occurs when rounded shoulders and forward head posture occur at the same time. Students enrolled in college typically adopt a range of positions throughout class and exams. Therefore, it is necessary to determine if these aberrant postures are learned or inherited. It is also necessary to ascertain whether any of the elements of a muscle imbalance are present at this point and to identify the reason for the change in upper back posture[4].

Work related segments, for instance, postponed static muscle load and dismal work might be a hotspot for hurt headway. Physical activity and masculinity are two further characteristics that may be linked to musculoskeletal pain. Issues with posture, vision, or mental health might also bring about musculoskeletal issue, particularly affecting the cervical and thoracic locale. As demonstrated by Janda's farsighted clarification of muscle ponderousness, significant cervical flexors and lower scapular stabilizers get the opportunity to be subdued in a foreseen illustration (upper crossed disorder)[5].

Proximal or shoulder support crossed confusion is another term used to describe Upper-Crossed Syndrome (UCS). Coziness of the levator scapula and upper trapezius on the dorsal side of the UCS intersects with coziness of the genuine and minor pectoralis muscles. Significant cervical flexor weakness ventrally crosses with insufficient middle and lower trapezius; this unevenness causes joint fractures, especially at the glen humeral joint, atlantooccipital joint, C4-5 area, cervicothoracic joint, and T4-T5[6].

Janda observed a discrepancy between these concentrated areas of discomfort inside the spine and the transitional zones where the morphology of the adjoining vertebrae changes. This study aimed to identify the key factors that contribute to students' upper-crossed issues changing. Certain particular postural motions are observed in upper cross problem, such as forward head carriage, thoracic hypnosis and extended cervical lordosis, elevated and developed shoulders, and

scapular winging and discontent. Due to Serratus front weakness, which causes the scapulae to grasp, turn, and wing, these postural movements decrease glen humeral quality by allowing the glenoid fosse to become more vertical[7].

Purpose Of the study to find Prevalence Musculoskeletal Dysfunction Due to backpacks in students with upper cross syndrome.

METHODOLOGY

Study Design: Observational study

Duration of Study: 6 months to 1 year.

Sample Size: 60 students (both male and female)

Selection Criteria

Inclusion criteria:

- Age of students (07 to 15) Years.
- Students suffering from Upper Cross Syndrome.
- Subject willing participate.

Exclusion criteria:

- Developmental disorders,
- Neurological disorders,
- Surgical interventions and previous spinal fractures

For this survey, a sample of students from Ahmedabad's New Education School was used.

Every student who satisfies the inclusion requirements is welcome to take part in the research. Through the semi-structured questionnaire, the data were collected. The student's posture, the weight of the bag, and the level of pain were all noted. Every outcome that was measured was obtained at baseline.

- SPADI
- NDI
- NPRS

RESULT:

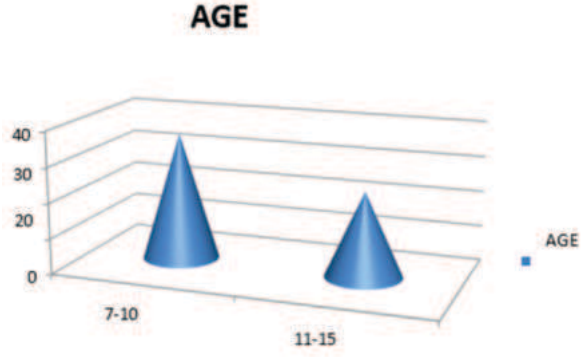
Descriptive analysis for Windows was used for all statistical studies. The mean and standard deviations were obtained using descriptive analysis. Demographic Data

AGE:

The research was performed on 60 participants between the age of 7-15 years. There were 36 participants between the ages of 7 to 10, 24 participants between the age 11 to 15.

Table1: Age Distribution

Age Distribution	
7-10 years	11-15 years
36	24

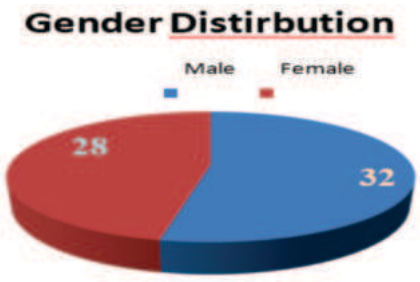


Graph 1: Age Distribution

Gender Distribution:

The research was performed on 60 students with upper cross syndrome, in which 32 Male & 28 Female.

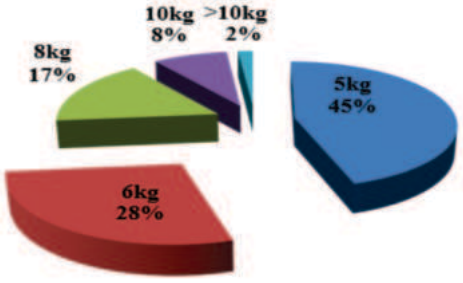
Gender Distribution	
Male	Female
32	28



Weight of bag:

Table 3: Weight of Bag.

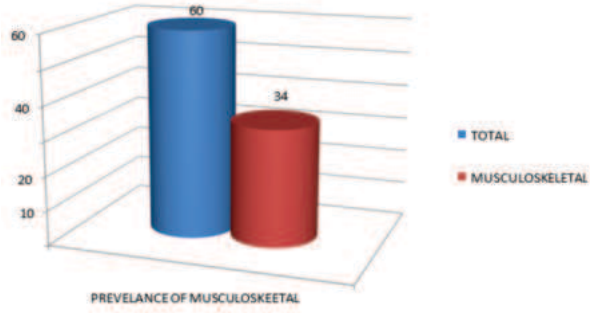
Mode	Number	Percentage
5Kg	27	45%
6Kg	17	28%
8Kg	10	17%
10Kg	5	8%
>10Kg	1	2%



Mean value of Outcome measures

Table 2: Mean value of Outcome measures

	Mean + SD
Age	9.6+4.46 years
NPRS	4.51+2.18
NDI	50.79 + 19.98
SPADI	51.28 ± 17.84



Graph 2: Prevelence Of Musculoskeletal Dysfunction

DISCUSSION:

The goal of the current study was to determine how common upper crossed syndrome is among school-age children. We had classified two diagonal muscles—the neck flexors and scapular retractors being weak, or the neck extensors and pectoralis minor being tight—as weak or tight for the purpose of the prevalence analysis. The cervical spine and shoulder girdle biomechanics may change as a result of a muscle imbalance in any one of the two diagonal muscles.

Present study conducted on 60 school going students with age of 07 to 15 years among that 34 students showed positive impact of musculoskeletal dysfunction with mean pain score 4.51±2.18, NDI mean & sd 50.79 ± 19.98 & SPADI 51.28 ± 17.84 Overall prevalence of musculoskeletal dysfunction is 55.66%.

A study on Neck, Shoulder, and Back Pain Associated with Carrying Heavy Backpacks among Spirit School Children in Lahore was undertaken by Rubina Khan et al. They came to the conclusion that children's back, shoulder, and neck pain was significantly correlated

with the weight of their school bags. Less symptoms were displayed by students who carried their bags over both shoulders and used twin straps[8].

Mayank Mohan et al done An experimental study on the Effect of backpack loading on cervical and shoulder posture in Indian school children and examining the effects of backpack loading on posture[9].

Sheir-Neiss, et al conducted study on The Association of Backpack Use and Back Pain in Adolescents and concluded that The use of backpacks during the school day and backpack weights are independently associated with back pain[10].

Mubeen et al done investigate on primary indicators of upper cross syndrome, which include forward head position, rounded shoulders, and neck stiffness and pain. The results of the study showed that 36.07% of students had neck pain when studying or using any kind of electronic device. Additionally, it was shown that 76.39% of students believed that when using a device or studying, they needed to support their head and upper back. However, 23.60% of the pupils felt otherwise.In their investigation on the prevalence of upper cross syndrome results showed that 52.1% of pupils found it challenging and 48.7% of students felt neck pain[11].

Clare Haselgrove et al had done study on Perceived school bag load, duration of carriage, and method of transport to school are associated with spinal pain in adolescents: an observational study and concluded that Neck pain is as common as back pain amongst adolescents. Perceived school bag load, duration of carriage and method of transport to school are associated with back and neck pain. Physical activity in the form of walking or riding to school may offset the potentially provocative effects of prolonged bag carriage and warrants further investigation.[12].

Therefore, it is imperative that people of all ages, especially students, take some action to improve their postural awareness.

CONCLUSION

Majority of the School going student are exposed to the risk of adopting poor postures which can lead to musculoskeletal dysfunctions. The results of this study suggesting the importance of postural awareness among school going students.

REFERENCES:

1. Christensen, K. Manual muscle testing and postural imbalance. Dynamic 2000
2. Mohammad bagher shamsi, Maryam Mirzei, Mohammad hamedirad, Comparison of muscle activation imbalance following core stability. 2020; 12:24.
3. Mujawar JC, Sagar JH. Prevalence of Upper Cross Syndrome in Laundry Workers. Indian J Occupational and Environmental Med. 2019;23(1):54–6..
4. Habibah N Ahmad, and Tiago M Barbosa,The effects of backpack carriage on gait kinematics and kinetics of schoolchildren.2019
5. AI Syazwan, MN Mohamad Azhar, AR Anita, HS Azizan, MS Shaharuddin, J Muhamad Hanafiah, AA Muhaimin, AM Nizar, B Mohd Rafee, A Mohd Ibthisham, Adam Kasani, Poor sitting posture and a heavy schoolbag as contributors to musculoskeletal pain in children.2011
6. K Mohd Azuan, H Zailina, BMT Shamsul, MA Nurul Asyiqin, MN Mohd Azhar, I Syazwan Aizat A cross-sectional study on 100 school children from two primary schools in Malaysia.2010
7. Janda, V., Muscle strength in relation to muscle length, pain, and muscle imbalance, in Muscle Strength (International Perspectives in Physical Therapy) Harms Ringdahl, Editor 1993, Churchill Livingstone: Edinburgh. p. 83–91
8. Rubina Khan , Hira Jabeen , Hafiz Sheraz Arshad Neck, Shoulder, and Back Pain with Carrying Heavy Back Packs among the Spirit School Children in Lahore.2016
9. Mayank Mohan, Upender Singh, Nishat Quddus, Effect of backpack loading on cervical and shoulder posture in Indian school children and examining the effects of backpack loading on posture.2007
10. Sheir-Neiss, Geraldine I. ,Kruse, Richard W. ; Rahman, Tariq ; Jacobson, Lisa P; Pelli, Jennifer A. The Association of Backpack Use and Back Pain in Adolescents.2003
11. Mubeen I, Malik S, Akhtar W, Iqbal M, Asif M, Arshad A, Zia S, Khalid S. Prevalence Of Upper Cross Syndrome Among The Medical Students Of University Of Lahore. Int J Physio [Internet]. 2016Jun.9;3(3):381-4.
12. Clare Haselgrove , Leon Straker , Anne Smith , Peter O'Sullivan (2008) Perceived school bag load, duration of carriage, and method of transport to school are associated with spinal pain in adolescents: an observational study.2008