

Prevalence of Upper Trapezius Tightness Due to Chronic Neck Pain and Poor Posture in University going Students

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ABSTRACT

Aim: This study aimed to find out the prevalence of upper trapezius tightness due to chronic neck pain and poor posture in university students.

Methods: An observational study design was opted for this research and a sample size of 360 participants were enrolled using non probability convenient sampling technique. Participants were selected on the basis of inclusion criteria which was undergraduate students of both gender above age 18 years. Data was collected using upper trapezius muscle length test to assess muscle tightness and Neck Pain Index Disability (NDI) questionnaire. For statistical analysis, SPSS version.24 was used and prevalence was interpreted using frequency tables and graphs. Association with chronic neck pain and poor posture was determined using chi square. $P < 0.05$ was considered to be significant.

Results: Upper trapezius tightness was found quite prevalent among university students. Results showed that 53.9% students could not lift heavy objects. 68.1% students could not read properly, 74.2% students had headache, 60% of students could not concentrate properly, 60.3% students had issues regarding sleep and 51.4% students could not be able to perform their recreational activities because of chronic pain in neck and poor postures while 52% students can drive easily with normal pain intensity due to upper trapezius tightness.

Practical implication: This observational study would add and authenticate an evidence to the literature among the certain study population. This study would educate the university students and general population about posture related muscle pain and tightness which would help them identify the association between posture and muscular imbalance.

Conclusion: This study concluded that upper trapezius tightness is highly prevalent among university student and it is strongly associated with chronic neck pain and poor posture.

Keywords: Trapezius Muscle, Muscle Tightness, Neck Pain, Poor Posture, University Student.

INTRODUCTION

Pain in neck is a global issue now a day and a common root to refer for physical therapy¹. Neck pain usually arises due to carrying a position for long time, worrying, stress, sleep in awkward position, accident causing whiplash injury, osteoarthritis or strain can cause neck pain. Main muscle of the neck is trapezius². Trapezius can become sore due to overuse and repetitive activities that cause muscular stress like weight lifting, swimming etc. Stress like excess tension can lead to muscle pain. Poor posture can cause stress on trapezius muscle like stooping over a computer or desk for a long time. As a result, muscle become tight and short³.

Neck pain can be arisen due to keeping the head, neck and shoulder in static position during activity of daily livings. Neck pain is commonly referred to physio department. The relation between neck pain and forward head posture was studied in healthy people and individuals with chronic ache in neck¹. Maintaining neutral head posture is beneficial for lessening tightness in upper and lower trapezius and to upgrade the bustle of scalenius anterior in contrast to forward head posture throughout the burdened flexion of shoulder⁴. Another research investigated the association of forward head posture with neck pain and increased upper trapezius muscle tightness in sitting position which concluded finding significant association between these variables ($p < 0.05$)⁵. Ergonomic stressors were also identified to be the significant risk factors causing musculoskeletal disorders⁶.

University going students including 74% of undergraduates, work per week for about an average of 25.5 hours. Astonishingly, there had been little evidence about how undergraduates got affected due to off campus jobs and the amount of impact occur on their studies by number of hours they worked⁷.

This study was designed to investigate the prevalence of tightness of upper trapezius muscle due to chronic neck pain and poor posture in university going students. This study would help to understand the various effects of UT tightness on daily life activities for instance reading, writing, lifting, driving, concentration and occurrence of headache. The purpose of this study was to find out the prevalence and association of upper trapezius muscle tightness with chronic neck pain and poor posture.

METHODS

A cross-sectional study design was adopted to conduct this research. Study settings were under graduate departments of University Of Management and Technology, University Of Lahore, University Of Education, Riphah International University and Punjab University Lahore. The study took 4 months after approval of synopsis.

Non probability convenient sampling technique was used to include participants in research. Sample size was calculated using *epitool* which turned out to be $n=360$ as 'N' denotes total population in which mean $\bar{x}=22.33$, standard deviation = ± 4.41 , minimum age taken was 18 years and maximum age taken was 30 years^{8,9}.

Male and female undergraduate students of age group 18-30 years suffering from neck and upper back pain for more than 3 months were included in this study. Participants not meeting the inclusion criteria, any signs of cervical spine/ radicular pain, recent traumatic injury of spine were excluded from the study¹⁰.

Neck Pain Disability Index Scale (NPDIS) questionnaires were distributed in different universities. Questions were explained to the students so they answered them accurately. Upper trapezius length test was used to measure upper trapezius muscle tightness which involved sustaining full contralateral lateral flexion

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and cervical spine flexion, followed by maximum shoulder girdle depression¹¹. IBM SPSS statistics, version 24.0 was used for the analysis of data. Data was checked for its completeness. Data was represented in form of mean, standard deviation, frequency and percentages. Association with chronic neck pain and poor posture was determined using chi square. P<0.05 was considered to be significant.

RESULTS

Table 1: Descriptive

Variable	Frequency	Percent	Total
Gender			
Male	204	56.7	360
Female	156	43.3	
Age			
18-21	123	34.16	360
22-25	213	59.16	
25-28	15	4.16	
29-32	9	2.5	
Department			
Engineering	73	20.3	360
Business	42	11.7	
Health Sciences	106	29.4	
Social Sciences	57	15.8	
Architecture	16	4.4	
Law	11	3.1	
Computer science	28	7.8	
Mass Com.	27	7.5	
Pain Intensity			
No pain	210	58.3	360
Mild pain	79	21.9	
Moderate pain	39	10.8	
Fairly severe pain	15	4.2	
Very severe pain	14	3.9	
Worst pain	3	.8	

According to Table 1, study results showed that out of 360 students, 204(56.7%) were males and 156(43.3%) were females. The results show that the mean (±SD) age (years) of the students was 22.33 ± 4.41. Minimum age taken was 18 years and maximum age was 30 years. Analysis showed that about 73(20.3%) were engineering students, 42(11.7%) were business students, 106(29.4%) were from Department of Health Sciences, 57(15.8%) were from Department of Social Sciences, 16(4.4%) were from Department of Architecture, 11(3.1%) were from Department of Law, 28(7.8%) were from Department of Computer Sciences and 27(7.5%) students were from Department of Mass Communication. Analysis showed that about 210(58.3%) of the students experienced no pain, 79(21.9%) had mild pain, 39(10.8%) had moderate pain, 15(4.2%) had severe pain, 14(3.9%) had very severe pain and 3(0.8%) experienced most terrible pain.

Table 2 showing the consequence of neck pain on personal care of the students were investigated and outcomes showed that 218(60.6%) participants might take care of their own selves with no additional pain, 58(16.1%) students might take care of themselves with additional aches, about 26(7.2%) students looking after themselves were painful. About 38(10.6%) students need help but could handle majority of their own care, 15(4.2%) participants require assistance for each day, and only 5(1.4%) students had difficulty washing and dressing. The effect of neck pain on the lifting ability was that 166(46.1%) could lift heavy objects without extra pain, 108(30%) could lift objects having extra pain. 45(12.5%) students experienced pain by lifting off the floor, 27(7.5%) students could not lift heavy weights 13(3.6%) students could only carry extremely lightweight, .1(3%) were not able to carry something. The effect of reading on neck pain was as analysis showed 166(46.1%) might read as long as they wish and experienced moderate neck ache, 53(14.7%) students could read only limited amount of things due to temperate neck ache. 15(4.2%) students could barely read due to brutal pain in neck and 11(3.1%) students could not read at all due to neck pain. Headache results showed that 93(25.8%) experienced no

headache and 74.2% students had complained of headache. 40% students had no problems in concentration and 16(4.4%) students could not concentrate at all due to neck pain.

Table 2: NDI Questionnaire Domains

Neck Pain Disability Index (NDI) Domains	Frequency	%age
Personal care		
Normal without extra pain	218	60.6
Normal with extra pain	58	16.1
Painful to look after	26	7.2
need help but managed	38	10.6
Need help everyday	15	4.2
Difficulty in washing and dressing	5	1.4
Total	360	100.0
Lifting		
Heavy weight without pain	166	46.1
Heavy weight with pain	108	30.0
Painful but can lift off the table	45	12.5
Painful but can lift from convenient position	27	7.5
Lift very light weight	13	3.6
Can't lift or carry	1	.3
Total	360	100.0
Reading		
No pain	115	31.9
Moderate pain but can read	166	46.1
Moderate pain but can't read	53	14.7
Severe pain	15	4.2
Can't read at all	11	3.1
Total	360	100.0
Headache		
No	93	25.8
Slight	128	35.6
Moderate, infrequently	43	11.9
Moderate, frequently	42	11.7
Severe, frequently	28	7.8
All the time	26	7.2
Total	360	100.0
Concentration		
No difficulty	144	40.0
Slight difficulty	104	28.9
Fair degree of difficulty	47	13.1
A lot of difficulty	32	8.9
Great difficulty	17	4.7
Can't concentrate	16	4.4
Total	360	100.0
Work		
No work load limit	190	52.8
Usual work	84	23.3
Most of usual work	47	13.1
Can't do usual work	15	4.2
Hardly do any work	18	5.0
Can't do any work	6	1.7
Total	360	100.0
Driving		
No pain	188	52.2
Slight pain	77	21.4
Moderate pain	37	10.3
Can't drive with moderate pain	16	4.4
Hardly drive	12	3.3
Can't drive	30	8.3
Total	360	100.0
Sleeping		
No trouble	143	39.7
Slightly disturbed	67	18.6
Mildly disturbed	54	15.0
Moderately disturbed	36	10.0
Greatly disturbed	31	8.6
Completely disturbed	29	8.1
Total	360	100.0
Recreation Activities		
No pain	175	48.6
Some pain	99	27.5
Painful but engaged in activities	37	10.3
Painful and engaged in few activities	24	6.7
Hardly engaged in activities	12	3.3
No activity	13	3.6
Total	360	100.0

In 52.2%, student's neck pain had no effect on their work whereas 47.8% students got effected by neck pain. After analysis

this study showed that maximum 188(52.2%) experienced no neck pain during driving 47.8% had problems during driving due to neck pain. 60.3% students had difficulty in sleeping according to analysis and 39.7% had no sleep difficulties. Maximum number of students 51.4% might not be able to perform leisure tricks due to pain in neck and poor posture while 48.6% had no difficulties.

Table 3: Chi Square Test

Variable	Chi-Square Statistics		Degree of freedom (DF)	P value
Chronic Neck Pain	Pearson Chi-Square	0.39 ^a	1	0.01
Poor Posture	Pearson Chi-Square	0.15 ^a	1	<.001

In Table 3, Chi square test showed significant association between chronic neck pain and poor posture with upper trapezius muscle tightness among university students ($P=0.01$ and $P <0.001$ respectively).While testing upper trapezius length, out of 360 participants 19% (68) of the students showed severe tightness,56% (201) had moderate, while 25% (91) were having mild tightness of upper trapezius muscle.

DISCUSSION

The research was carried out to check the prevalence of upper trapezius tightness due to poor posture and neck pain in university going students. According to analysis, the main results show that 43.3% were female and 56.7% were male. About 21.9% of students had complained of mild pain and 0.8% was facing severe pain in neck. This research shows that UT affected more as compared to LT and MT contrary to which other study shows that whole trapezius got affected¹².

This study show that 25.8% students had no headaches due to neck pain but 7.2% students had headaches all the time in contrast to which some studies show that headaches are more common due to neck pain and rounded shoulders¹.

Working abilities in this research shows that 52.8% participants can work with no limitation while other study shows that neck pain can cause more limitations in sitting position¹³.

This study shows that 3.1% participants are not able to study due to UT tightness and neck pain contrary to which other research shows that participants can ready easily without neck pain on desk slops¹⁴.

Our study shows that upper trapezius tightness due to poor position and neck ache can restrict movements of neck while other research shows that upper trapezius does not has any role in limiting protraction and retraction of the neck (15). Excessive use of computer in offices can cause tightness of UT muscle whereas other study shows that there is more effect on middle and lower trapezius.

CONCLUSION

This study concluded that upper trapezius tightness is highly prevalent among university student and it is strongly associated with chronic neck pain and poor posture.

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