

Prevalence of forward head posture among university students

Arfa Naz, Muhamamd Salman Bashir, Rabiya Noor

University Institute of Physical Therapy, The University of Lahore, Pakistan

Objective: To determine the prevalence of forward head posture among university students and its possible correlation with other posture related factors.

Methodology: This cross-sectional study was carried out on 197 students from four different universities. A modified questionnaire was used to collect the data and posture was assessed using a plumb line. The data were analyzed using SPSS version 21.

Results: The prevalence of forward head posture was found to be 63.96%, including male and female students. The forward head posture was found to be correlated with shoulder rolling forward.

Conclusion: The forward head posture is very prevalent among the university students. It is correlated shoulder rolling forward. (Rawal Med J 201;43:260-262).

Keywords: Neck pain, students, posture.

INTRODUCTION

Forward head posture (FHP) is the anterior positioning of the cervical spine. When the head changes its position from normal and moves forward from the cervical spine the condition is termed as forward head posture. It moves the center of gravity forward from spine. This puts abnormal stress on the cervical musculature causing muscle imbalance.¹

FHP results in increased external flexion torque to the vertebrae of cervical spine causing severe tension on the extensors of the neck and surrounding connective tissue.² Eventually, there is increased burden on the spinal tissue causing persistent spinal malformation. Additionally, FHP reduces sense of proprioception in cervical spine.³

A study showed prevalence of FHP to be 85.5% and a significant association was seen between FHP and gender.⁴ A study on heroin users showed that 36.7% had moderate FHP while 20.0% had severe FHP.⁵ The prevalence in children and teenagers was 53.5%.⁶ FHP has shown some association with neck pain. Faulty posture during computer work is the reason for even worse pain that is associated with FHP.⁷ The poor posture leads to pain and deformity but FHP has not always been linked with neck pain.⁸ FHP is also known to elevate the compression on the

cervical spine involving the vertebral joints, ligaments and back of cervical spine⁹ and also to disturb the anatomy and functioning of connective tissue by affecting its length and power hence causing pain¹⁰ and hyperextension of the upper part of the neck(C1-C3) and flexion of the lower part(C4-C7).¹¹

FHP decreased the EMG activities of the middle trapezius, splenii, and sternocleidomastoid muscle and these reduced activities resulted from changes in muscle length due to FHP and were associated with a decreased ability to generate force.¹² Comparing effect of kinesio taping (KT) and therapeutic training showed that both had positive effect on the FHP treatment but generally therapeutic training was more effective.¹³ To correct FHP, stretching of the shortened upper trapezius, sternocleidomastoid, and levator scapulae and strengthening of the deep cervical flexor muscles has been found to be effective.¹⁴ The aim of this study was to find out the prevalence of FHP among university students.

METHODOLOGY

This cross-sectional study was carried out on 197 students from four different universities. Sample was calculated using an online calculator EpiTools. University students who were taking

consecutive lectures for 3 hours and who worked for 3 hours or more on laptop were included in the study. Workers and Professionals and students who had postural disorders due to genetic defects were excluded from the study. Self-made Questionnaire was used after checking validity through pilot study. Forward head posture was assessed using a plumb line. The gender, age, weight and height of each student was asked and BMI was calculated.

The tragus of ear was marked as landmark for the assessment of FHP. Head posture is thought to be normal, if the plumb-line passes through the tragus of the ear, thus forward displacement of tragus from the plumb line is considered as FHP.⁴ The assessment of FHP was done in sagittal plane. Students were instructed to stand laterally right behind the plumb line. They were asked to stand in upright posture where the plumb line passed through the tragus. Then they were instructed to stand in their normal, easy posture with their arms at sides and their feet shoulder width apart. Students who had their tragus moved forward from the plumb line were marked to have forward head posture. Data were analyzed using SPSS version 21. The association between groups was assessed using chi-square test.

RESULTS

Out of 197 students, 4.82% were female and 45.18% were male (Table 1). Only 16 students from a total of 197 reported that they had attended a workshop about postural awareness while 181 students reported that they had never attended any workshop on postural awareness. 63.96% students had FHP and 36.04 % students did not.

Table 1. Descriptive Statistics (n=197).

	Minimum	Maximum	Mean±SD
Age (years)	18.00	28.00	21.5939±1.73133
Height (meters)	1.50	1.91	1.6903±0.082003
Weight (Kg)	42	105	68.6345±12.6494
BMI (kg/m ²)	17.2	31.90	23.8804±2.99919

Table 2. Association between FHP and shoulder rolling forward.

		Forward head posture		Total	P value
		Yes	No		
Do you let your shoulders roll forward during study?	Strongly agree	25	1	26	0.000
	Agree	99	17	116	
	Disagree	2	37	39	
	Strongly Disagree	0	16	16	
Total		126	71	197	

When asked "Do you let your shoulders roll forward during study?" Out of 197, 142 (72%) students agreed (Table 2).

DISCUSSION

We found that prevalence of FHP was 63.96% among university students. These results indicate that FHP is a common postural defect among university students. This high prevalence may be related to the prolonged computer use and faulty posture during lectures. A study among dental staff showed the prevalence of FHP to be as high as 85.4%.⁴ Our study shows less prevalence than that. The expected reason for that is the fact that the dentists have to work for longer duration with their head moved forward than the students.

A study among adolescents using two questionnaires and digital photographing as assessment tool showed the prevalence of FHP to be 25%.¹⁵ While we used plumb line as an assessment tool, our study showed higher prevalence. The possible reason for this can be that the university students may have more computer use than the adolescents. Another study showed that the FHP was seen more in males than in females¹⁶ while our study did not find any association between gender and FHP. Same study found prevalence of FHP in healthy subjects to be 66% among individuals ranging from 20-60 years of age.¹⁶

Among university students who work on computer for three hours or more, FHP was found to be the most commonly occurring postural disorder, being as prevalent as 85%¹⁷ The students were asked if they had attended any workshop on postural

awareness. Only 16 students from a total of 197 reported that they had attended a workshop about postural awareness. These results indicate a lack of knowledge about proper upright posture among university students.

CONCLUSION

The forward head posture was found to be quiet prevalent among university students. University students tend to attain a faulty posture and there is a lack of awareness about proper posture among them. There was an association seen between forward head posture and shoulder rolling forward. We suggest further studies on this topic with the focus on the association of different behavioral and environmental factors with the FHP.

Author Contributions:

Conception and design: Arfa Naz
 Collection and assembly of data: Arfa Naz
 Analysis and interpretation of the data: Rabiya Noor
 Drafting of the article: Arfa Naz
 Critical revision of the article for important intellectual content: Muhamamd Salman Bashir
 Statistical expertise: Rabiya Noor
 Final approval and guarantor of the article: Muhamamd Salman Bashir
Corresponding author email: Arfa Naz: iceburg94@yahoo.com
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