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PREVALENCE OF FORWARD HEAD POSTURE IN FEMALE COLLEGE GOING STUDENTS OF GANDHINAGAR

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ABSTRACT : **Background:** Forward head posture is one of the commonest postural malalignments found in today's youth. This postural malalignment is one of the major causes of musculoskeletal conditions in the body. If these postural changes are detected early, the musculoskeletal conditions can be treated as well as further progression can be prevented. Hence the purpose of the study was to find out the prevalence of FHP amongst college going students.

Materials and methods: Total 200 participants were included in the study. Participants were evaluated for FHP using 'ON PROTRACTOR' mobile application via craniovertebral and craniohorizontal angle.

Result: Eighty percent of participants had forward head posture.

Conclusion: Prevalence of FHP is high amongst female college going students in Gandhinagar city.

Keywords: Forward head posture, Prevalence, Female college going students

INTRODUCTION

Forward Head Posture: Posture is the attitude assumed by the body either with support during muscular inactivity, or by means of coordinated action of many muscles working to maintain stability or to form an essential basis which is being adapted constantly to the movement which is superimposed upon it.

'Turtle-neck posture' or 'Forward head posture' is one of the common postural disorders in patients with cervical pain. [1] FHP has been defined as 'Any alignment in which the external auditory meatus is positioned anterior to the plumb line through the shoulder joint'. [2] FHP is considered to co – exist with hyperextension of lower cervical spine, rounding of upper back and elevation – protraction ofshoulders.[3]In FHP, head shifts anteriorly from the line of gravity, scapula may rotate medially, a thoracic kyphosis may develop and overall vertebral height may be shortened.[4] Because of this structural changes, typically, muscles overused in a certain direction will become tighter and shorter an effect known as 'adaptive shortening'. Opposing muscles to repetitive movements sustain stretches during prolonged postures. As a result, these will tend to become longer and weaker – an effect known as 'stretch weakness',

Due to FHP there is tightness of the upper trapezius, pectoralis major and levator scapulae and weakness of rhomboids, serratus, middle and lower trapezius, deep neck flexors, especially scalene muscles.[5]

Neck pain is a common complaint in general population.[6] Among diverse neck pain, mechanical neck pain is the most common type with pain confined in the area on posterior aspect of neck, that can be exacerbated by neck movement or sustained posture. Along with considerable cost for individual and society neck pain is a frequent source of disability causing human suffering and affecting wellbeing of individual.[7]

Aims of the study

• Owing to ill-effects of FHP, it is necessary to evaluate the prevalence of forward head posture to avoid future complications amongst the college going students of Gandhinagar. Hence, the aim of the study was to find out the prevalence of Forward Head posture in female college going students of Gandhinagar with the age group of 17 to 23 years.

Objectives of the study

• To find out the prevalence of FHP with the help of craniovertebral angle and craniohorizontal angle.

MATERIALS & METHODS

STUDY SETTING

• C. M. Patel college of physiotherapy – Musculoskeletal

department, Gandhinagar.

DURATION OF THE STUDY

• 5 Months

INCLUSION CRITERIA

• Female college going students

• Age 17 – 23 years

EXCLUSION CRITERIA

•Non musculoskeletal pain of shoulder

• Signs of neurological involvement

• Cervical PIVD

• Cervical stenosis

• History of cervical trauma

• Previous neck & shoulder surgery

SAMPLE SIZE

A convenient sample of 200 healthy females aged 17-23 years participated in observational study. Subjects were recruited from

Physiotherapy, Nursing & Engineering department through word of mouth according to the inclusion and exclusion criteria. After explaining verbal information about the nature of study, informed consent was obtained from each participant.

PROCEDURE

Interested subjects were informed about aims and procedure of the study. Subjects were included according to their inclusion and exclusion criteria. They shallsign the written consent, to be considered a study-subjects. A general physiotherapy assessment was taken, and the base line data was

collected on the reporting date.

Photogrammetry

A digital imaging technique was used to evaluate head and neck posture in the high sitting position. In this method the two angles called craniovertebral and craniohorizontal angles were measured using smartphone app “ON PROTRACTOR”. “A REDMI MAX 2” phone was placed at a distance of one meter on a fixed base without rotation or tilt. The height of the camera was adjusted to the level of the subject’s shoulder and a self-balanced position was chosen to standardize the head and neck posture of subjects.

Procedure for assessment of forward head posture

Participants were made to sit on the stool with their knees in 90 degree of flexion and their feet flat on the ground and were instructed to focus at a particular-eye level. The starting position was standardized by placing the subject in an upright position. A mobile phone was mounted on a stand and placed laterally one meter away from the subject. Bright color markers were placed on the C7 spinous process, tragus of ear and canthus of eye. The examiner located the C7 spinous process by asking the subject to move the cervical spine into the flexion and extension. The C7 spinous process is more prominent, while C6 spinous process is absent in palpation when the cervical spine is extended. The angle between the line joining C7 to tragus and a vertical line extending from C7 was measured. Also, the line connecting the external canthal angles of the eyes was measured, and photographs were taken.

The resting forward head posture was the outcome measure. The subject may change the resting Forward head posture if they were conscious. To avoid this, the subjects were instructed to perform flexion & extension of neck for 10 times. After which the lateral photographs were taken, to avoid experimental bias. Lateral photographs were analyzed using ON PROTRACTOR application to measure a degree of craniovertebral and craniohorizontal angle.

RESULT

In this observational study, total 200 participants were recruited. Each participant was evaluated for CV angle, CH angle, muscle strength and range of motion of cervical spine. The study concluded that 80% students had altered CV angle and 22.5% students had altered CH angle which is correlated with FHP. It shows that because of FHP, it affects the CV angle more than CH angle as the ratio of affection between CV angle and CH angle is approximately 4:1.

DISCUSSION

The study aimed to investigate the prevalence of FHP amongst female college going students of Gandhinagar. It was found that total 83% of participants had forward head posture among which 80% of participants had altered CV angle and 22.5% of participants had altered CH angle.

This prevalence was due to the difference in modern lifestyle. It was observed that participants were more of into use of laptops, mobile phones and attaining particular position or attaining improper posture for prolong period of time which could be one of the reasons behind forward head posture. Also, the work positions attained by students of physiotherapy and nursing field during standing, namely during assessment and treatment time could be one of the reasons. Also, while working in standing position, especially during the treatment period, neck postures are asymmetric or at extremes flexion or in other words, in ergonomically inappropriate body position

Also, the study hours affect the craniovertebral angle which leads to FHP. As due to the long duration of study, neck remains in one sustained position that is forward and bend position of the neck which causes neck pain and that is one of the reasons for FHP.

CONCLUSION

Prevalence of forward head posture was found to be high in female college going students between the age group of 17 years and 23 years. Prevalence of CV angle was found approximately 80% and CH angle was found approximately 22.5%. Total prevalence of forward head posture in college going girls of Gandhinagar city was 80%.

REFERENCES

1. Grant R(Ed.), Physical therapy of the cervical and thoracic spine(2nd ed.), Churchill Livingstone, Edinburgh (1994); pp. 145-165

2. Bogduk, N., & Mercer, Biomechanics of the cervical spine. I: Normal kinematics, Clinical Biomechanics (2002); 15(9), pp. 633-648.

3. Jull, G. A., O'Leary, S. P., & Falla, D. L. Clinical assessment of the deep cervical flexor muscles: The craniocervical flexion test. Journal of Manipulative and Physiological Therapeutics (2008), 31(7), pp. 525-533.

4. Bergmark, A. Stability of the lumbar spine: A study in mechanical engineering. Acta Orthopaedica (1989), 60(S230), pp. 1-54.

5. Pownall PJ, Moran RW, Stewart AM. Consistency of standing and seated posture of asymptomatic male adults over a one-week interval: A digital camera analysis of multiple landmarks. International Journal of Osteopathic Medicine. 2008; 11(2), pp. 43-51.

6. Grimmer K. An investigation of poor cervical resting posture. The Australian Journal of Physiotherapy. (1997); 43(1): pp. 7.

7. Dunk NM, Lalonde J, Callaghan JP. Implications for the use of postural analysis as a clinical diagnostic tool: reliability of quantifying upright standing spinal postures from photographic images. Journal of Manipulative and Physiological Therapeutics. (2005); 28(6): pp. 386-92.

8. Lv P, Peng Y, Zhang Y, Ding K, Chen X. Kinematic causes and exercise rehabilitations of patients with round shoulder, thoracic kyphosis and forward head posture (FHP). Epidemiology: Open Access. (2016);6(5), pp. 1-6.

9. Deborah Falla, G. Jull, Paul Dall`Alba, Alberto Rainoldi, Roberto Merletti. An electromyographic analysis of the deep cervical flexor muscle in performance of cranio cervical flexion. physical therapy (2003); 83(10): pp. 899-06.

10. Ruivo RM, Carita AI, Pezarat-Correia P. The effects of training and detraining after 8 months resistance and stretching training program on forward head and protracted shoulder postures in adolescents: randomised controlled study. Manual therapy. (2016); 1;21, pp. 76-82.

11. Kendall PF, Kendall ME, Geise PP, Rodgers MM, Romani W. Muscles Testing and Function with Posture and Pain. Baltimore, MD: Lippincott Williams and Wilkins; (2005); pp. 64-85.

12. Raine S, Twomey L. Posture of the head, shoulders and thoracic spine in comfortable erect standing. Aust J Physiother. (1994); 40(1): pp. 25-32. Accessed 26 February 2019.

13. Burt HA, Effects of faulty posture; President's Address. Proc R Soc Med. (1950); 43(3), pp. 187–194. Accessed 26 February 2019.

14. Spine health. Forward head posture's effect on neck muscles. https://www.spine health.com/coditions/neck-pain/forward-head-postures-effect-neck-muscles.

15. Fernándezd, Peñas, C., Alonso B, C., Cuadrado M, Pareja J. Forward head posture and neck mobility in chronic tensiontype headache: A blinded, controlled study. Cephalalgia. (2006); 26(3), pp. 314-9.

16. Lau HMC, Chiu TTW, StMP, Lam TH.Measurement of craniovertebral angle with Electronic Head Posture Instrument: Criterion validity. Journal of Rehabilitation Research and Development. (2010); 47(9): pp. 911.

17. Garrett T, Youdas J, Madson T. Reliability of measuring forward head posture in a clinical setting. The Journal of Orthopaedic and Sports Physical Therapy. (1993); 17(3): pp. 155.

18. Hanten W, Lucio R, Russell J, Brunt D. Assessment of total head excursion and resting head posture. Archives of Physical Medicine and Rehabilitation. (1991); 72(11), pp. 877

19. Moustafa IM, Diab AA. The effect of adding forward head posture corrective exercises in the management of lumbosacral radiculopathy: a randomized controlled study. Journal of manipulative and physiological therapeutics. (2015);38(3), pp. 167- 178.

20. Binder AI. Cervical spondylosis and neck pain. BMJ: British Medical Journal (2007); 334(7592), pp. 527-31.

21. Petri K Salo, Arja H. Hakkinen, Hannu Kautiainen & Jari Ylinen. Effect of neck strength training on health – related quality of life in females with chronic neck pain.a RCT 1 year follow up, health & quality of life outcome (2010), 8:48. 22. Mamania JA, Anap DB. Prevalence of Forward Head Posture amongst Physiotherapy Students: A Cross-sectional Study. Int J Educ Res Health Sci (2018); 1(4), pp. 125-127.

23. Kisner, Carolyn, and Lynn Allen Colby. Therapeutic exercise: Foundations and techniques. Philadephia. 6th edition. pp. 985.

24. Lewis, J.S., Wright, C., Grren, a., Subacromial impingment syndrome: the effect of changing posture on shoulder range of movement. J. Orthop. Sports Phys. Ther. (2005); 35(2),

25. Bansal A, Bansal P, Kaur S, Malik A. Prevalence of neck disability among dental professionals in North India. J of Evolution of Med and Dent Sci. (2013);45(2): pp. 8682-8687.

26. Guan X, Fan G, Wu X, Zeng Y, Su H, Gu G, Zhou Q, Gu X, Zhang H, He S. Photographic measurement of head and cervical posture when viewing mobile phone: a pilotstudy. European Spine Journal. (2015);24(12): pp. 2892-2898. 27. Nejati P, Lotfian S, Moezy A, Nejati M. The study of correlation between forward head posture and neck pain in Iranian office workers. International journal of occupational medicine and environmental health. (2015);28(2): pp. 295.. 28. Cho CY. Survey of faulty postures and associated factors among Chinese adolescents. Journal of manipulative and physiological therapeutic. (2008);31(3): pp. 224-229.

29. Pool E, Treleaven J, Jull G. The influence of neck pain on balance and gait parameters in community-dwelling elders. Man ther (2008);13: pp. 317-324. **30.** Lee KJ, Han HY, Cheon SH, Park SH, Yong MS. The effect of forward head posture on muscle activity during neck protraction and retraction. Journal of physical therapy science. (2015); 27(3): pp. 977-979.