

**IJCRR**

Vol 06 issue 11

Section: Healthcare

Category: Research

Received on: 11/04/14

Revised on: 07/05/14

Accepted on: 28/05/14

## EFFECT OF POSTURAL CORRECTION ON NECK PAIN IN COMPUTER OPERATORS

Nirav Vaghela, Deepak Ganjiwale

KMPIP, Shree Krishna Hospital, H.M. Patel Centre for Medical Care and Education,  
Karamsad, Gujarat, India

E-mail of Corresponding Author: niravpv@charutarhealth.org

### ABSTRACT

**Introduction:** Prolonged use of computers during daily work activities and recreation is often cited as a cause of neck pain. Several studies have been carried out for work related musculoskeletal disorders; neck shoulder and arm disabilities. However, evidences focussing on neck pain are seldom obtained. Therefore, this study has been undertaken to throw light on effect of postural correction on neck pain in computer workers.

**Methodology:** This is the retrospective study done from data routinely collected for the individual who were working the computer more than 15 hrs per day and having the neck pain more than 3 months at shreekrishan hospital and PrayasEnf. Ltd. Anand, Gujarat. Data of 48 patients (43 males and 5 females) were analysed for the study. Neck Disability Index(NDI) and craniovertebral angle(CV) were used for the data collection.

**Result:** Statistically and clinically significant improvement was observed in Pre and post NDI and CV angle. ( $P < 0.001$ ).

**Conclusion:** The outcome of the current study i.e. isometric strengthening exercises and postural correction are helpful in significant reduction of pain.

**Keywords:** Neck pain, posture, neck disability index, craniovertebral angle.

### INTRODUCTION

Prolonged use of computers during daily work activities and recreation is often cited as a cause of neck pain. 12-month prevalence of neck pain in office workers of 45.5%. one year prevalence of neck pain in office workers to range from 17.7% to 63%. the most prevalent musculoskeletal symptom among studied computer operator neck pain (48.2%) followed by lower back pain (48.3%). (1) Awkward posture, prolonged sitting, working duration more than 6 years in computer field and daily working hours in front of computer more than 5 hours are the significant risk factors for having musculoskeletal symptoms. (2) The development of musculoskeletal pain or discomfort in computer operator is theorized to be multifactorial, and includes occupational

ergonomic, psychosocial and demographic parameters. A review of epidemiological studies concluded that posture is an independent risk factor for development musculoskeletal disorder among computer user. Proper postures are believed to be the state of musculoskeletal balance that involves a minimal amount of stress and strain on the body. Although correct posture is desired, many people do not exhibit good posture. An ideal posture is considered to exist when the external auditory meatus is aligned with the vertical postural line. (3) Proper posture maintains the musculoskeletal balance equilibrium.

The most common consequence of faulty posture in computer operators is Forward head posture (FHP). Intensive computer work puts stress and strain on muscles, as well as joints, owing to

continuous and repetitive nature of movements resulting in greater loading on the supporting structure and may cause sensitization and pain. Forward head posture involves flexion of lower cervical spine in combination with extension of upper cervical spine. It is often accompanied by protracted shoulders.(4)

A number of randomized clinical trials have demonstrated the effectiveness of cervical strengthening exercises in the treatment of patients with neck pain.(5) Studies have also stated the effective role of neck and girdle strengthening in patients with mechanical neck pain. According to a recommendation, specific neck exercises that are simple to perform and target more specific structures related to postural neck pain and feel they should be the first line of defence in work related postural neck pain as consistent with current literature. Outcome measures; subjective and objective are a must to estimate the difference in pain and disability before and after the treatment regimen.

Several studies have been carried out for work related musculoskeletal disorders; neck shoulder and arm disabilities.(6) However, evidences focussing on neck pain are seldom obtained. Therefore, this study has been undertaken to throw light on effect of postural correction on neck pain in computer workers.

## OBJECTIVES

1. To compare the difference in level of neck disability before and after postural correction.
2. To note the difference in craniovertebral (CV) angle before and after postural correction.

## METHODOLOGY

This is the retrospective study done from data routinely collected for the individual who were working the computer more than 15 hrs per day and having the neck pain more than 3 months at shreekrishan hospital and PrayasEnf. Ltd. Anand, Gujarat. Data of 48 patients (43 males and 5 females) were analysed for the study. Age gender and the other demography data of the patient s

were recorded . The research project was conducted after getting clearance from Human Research Ethics Committee (HREC) of the institution. Informed consent was obtained from each participant after explaining them details regarding various non-invasive procedures to be carried out during the study. The patient having Past history of cervical trauma, Radiation of pain, Parasthesia, sensory loss, Neuromuscular disorder, Rheumatic diseases, Metastasis, Higher mental dysfunction, Problems of understanding were excluded. The neck disability index (NDI) scale and craniovertebral (CV) angle were used for the data collection.

### Neck Disability Index (NDI)

Herein, each recruit was asked to fill a 50 point scale consisting of 10 items. Each of the 10 items is scored from 0 - 5. The maximum score is therefore 50. Occasionally, a respondent will not complete one question or another. The average of all other items is then added to the completed items.

### Craniovertebral (CV) Angle

CV angle was measured by placing markers over the spinous process of C<sub>7</sub> vertebra and the tragus of the ear. Then a digital camera was placed on a tripod stand at 1 meter distance from the subject on the right side. Height of the camera was adjusted accordingly in order to take a picture of right lateral view. The participants were dressed adequately so as to expose the area of lower neck for placement of marker at the level of C<sub>7</sub> spinous process. Participants were asked to stand with their left shoulder facing the wall and then perform available pain-free active range of motion thrice to promote relaxation. Picture was then captured. Following this, each picture was imported to UTHSCSA image tool software to obtain the value of CV angle. After the outcome measures had been taken, each participant was prescribed a regime of self resisted isometric neck exercises; active girdle exercises, pectoral self stretching and active postural correction (chin tucking and sitting

erect with shoulders retracted). Participants were advised to follow this regime twice a day for a period of 4 weeks. All subjects received verbal instruction, visual demonstration, and graphic illustrations (Handouts) of the exercises. Subjects received a daily reminder to remind them of the suggested frequency. At the end of 4 weeks, all the outcome measures were re-recorded to note the difference in the level of neck disability change in CV angle.

## RESULT

In the present study, 145 individuals were approached from SKH (75) and PRAYAS ENG.

LTD. (70). 50 subjects fulfilling all inclusion criteria were recruited for the study. Loss to follow up was obtained for 2 subjects. Therefore, the sample size for the study was 48. (43 males and 5 females) The average age of subjects was 38.1 years (min.= 24; max= 55) while average hours of work were 28.31 hours/week (min.= 20; max.= 40)

The overall pre and post NDI was found to be statistically highly significant in the patients after physiotherapy rehabilitation ( $p < 0.001$ )

The overall CV angle was found to be statistically highly significant in the patients after physiotherapy rehabilitation ( $p < 0.001$ ).

**Table 1: Mean of NDI (Pre and Post )**

	N	MEAN	SD	P value
PRE	48	9.95	3.96	<0.001
POST	48	4.35	3.19	

**Table 2: Mean of CV Angle (pre and post)**

	N	MEAN	SD	P value
PRE	48	45.04	6.38	< 0.001
POST	48	46.93	6.63	

## DISCUSSION

One year prevalence of neck pain in office workers to range from 17.7% to 63%. (7) In present study, the prevalence was found to be 33.12%. Studies indicate that patients with small CV angle have a greater forward head posture, and the greater the forward head posture, the greater the disability. In the present study, a decrease of 5.60 in the value of NDI and an increase of 1.89° in the value of CV Angle was found. These changes indicate an improvement in posture and reduction in the level of disability.

Specific exercises may be effective for the treatment of acute and chronic mechanical neck disorder, with or without headache. To be of benefit, a stretching and strengthening exercise program should concentrate on the

musculature of the cervical, shoulder-thoracic area, or both. (8) In the present study, the exercise programme consisted of isometric neck exercises; dynamic girdle exercises and stretching.

Majority of subjects in the stretching exercise group and the resistance exercise group reported that the exercises performed 1 to 2 times daily for 4 weeks were helpful in reducing discomfort in the neck and upper back. (9) The present study suggests that isometric strengthening exercises are helpful in significant reduction of pain, disability and improvement in posture.

## CONCLUSION

The outcome of the current study i.e. isometric strengthening exercises and postural correction are helpful in significant reduction of pain.

### Limitation

It is the limitation of this study that there is small sample size for the study. The further study would be done with the large sample size and different research design.

### ACKNOWLEDGEMENT

The authors would like to thank to principal (KMPIP Karamsad Anand) for all his support and encouragement.

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