

Prevalence of Neck Pain and Disability in Computer Users

Yakshi Bhardwaj¹, Richa Mahajan²

¹Student at Department of Physiotherapy, Galgotias University, Uttar Pradesh, India

²Assistant Professor at Department of Physiotherapy, Galgotias University, Uttar Pradesh, India

Abstract: Introduction: In current era of information technology, computers are widely used by students. Prolonged use of computers during daily work activities and recreation is often cited as a cause of neck pain among college students. Objective: The aim of the study was to find the prevalence of neck pain and disability in computer users (students of Galgotias university). Method: 500 students (computer users) participated in the study voluntarily by filling the Neck disability index questionnaire and Visual analogue scale. Result: Prevalence of neck pain was 99.2% and disability due to neck pain was 65.8%. Conclusion: Incidence of neck pain is very high in students with prolonged computer usage. But the incidence of the disability caused by it is not very high.

Keywords: Neck pain, Neck disability index (NDI), Computer users, Students

1. Introduction

Work-related musculoskeletal disorders (WRMSD) are injuries or disorders of musculoskeletal tissues associated with workplace risk factors and are known by a variety of terms, including cumulative trauma disorders, repetitive strain injuries and overuse injuries. For people who spend a great deal of time using computers, WRMSDs of the neck are a common problem.^[1]

In current era of information technology, computers are widely used by students. Though information, communication and technology are being used to improve health care systems, there are also associated health hazards with the use of these devices.^[2] Prolonged use of computers during daily work activities and recreation is often cited as a cause of neck pain.^[3]

Neck pain is the pain experienced anywhere from the base of the skull at ear level to the upper part of the back or shoulder. Symptoms of neck pain can include general aches and pains that can be postural fatigue in the neck, shoulders, arms, or persistent pain or discomfort in soft tissues surrounding the neck and shoulders.^[3]

Neck pain and computer users are clearly connected due to extended periods of sitting in a certain position with no breaks to stretch the neck muscles. Four to five hours of daily computer use is a noted risk factor for neck pain in adolescents. An ideally aligned neck has a slight lordotic curvature. Prolonged Computer use and sitting with rounded shoulders and faulty neck posture disturbs the normal lordotic curve of neck leading to muscular imbalance and consequently neck pain. Keeping the neck in proper alignment is very important in preventing neck pain.^[3]

In the recent years, there has been an increase in incidence of musculoskeletal complaints among college students. Potential risk factors for this might be increased use of computers.^[1]

The aim of the study was to find the prevalence of neck pain and disability in computer users (students of Galgotias university). The term computer user employed in this article refers to desktop users.

2. Methodology

Inclusion Criteria

- 1) Both male and female computer users [students of B.Tech - computer science department (1st yr, 2nd yr, 3rd yr, 4th yr)] at Galgotias university, Greater noida.
- 2) Age between 18-25 years
- 3) Persons using computer for 3-6 hours a day
- 4) Ability to read and understand English

Exclusion Criteria

- 1) If not willing to participate
- 2) Participants were excluded if they had any specific medical condition affecting the cervical spine [such as ankylosing spondylitis, radiculopathy, tumors, infection and disc prolapse]
- 3) Recent surgery of neck pain

Procedure

500 (male and female) subjects participated in the study. Subjects were screened for inclusion and exclusion criteria. A duly signed consent form was obtained after thorough explanation of the procedure. Descriptive data for age, gender, height, weight, hours of computer use, pain measurement on VAS (visual analogue scale) were obtained. Subjects participated voluntarily by completing Neck disability index questionnaire.

Pain on VAS:^[4]

VAS was described to patients using a 100 mm horizontal line with 0 representing “no pain” and 100 representing “worst pain imaginable”. Subject marked a point on the line that matched the current amount of the pain he or she felt and this rating was then measured from the left edge (= VAS score). 100-mm VAS ratings of 0 to 4 mm can be considered

no pain; 5 to 44 mm, mild pain; 45 to 74 mm, moderate pain; and 75 to 100 mm, severe pain.

Neck disability index (NDI) questionnaire: ^{[5], [6]}

It is designed to provide information as to how neck pain affects a person's ability to manage in everyday life. The NDI contains 10 items - pain intensity, personal care, lifting, work, headaches, concentration, sleeping, driving, reading, recreation. Each item of NDI is scored from 0 to 5. The scoring interpretation for the NDI is as follows: 0-4 = none; 5-14 = mild; 15-24 = moderate; 25-34 = severe; over 34 = complete. The NDI was filled by the subject himself/herself. It took about 5 minutes to fill the scale.

3. Data Analysis

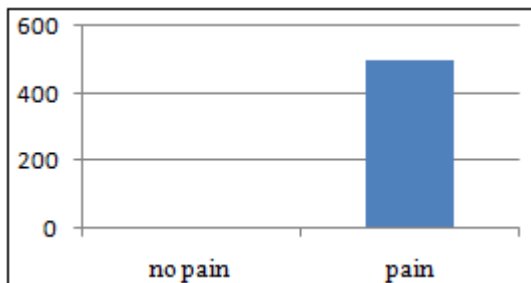
Data was analysed on Microsoft excel version 8 for making table bar graphs.

4. Results

The population of 500 subjects (112 females and 388 males) were surveyed for the prevalence of neck pain and disability in the age group of 18 to 25yrs. Out of 500 students VAS scores were: no pain in 4 (0.8%) students and pain in 496 (99.2%) students. (Table 1 and Graph 1) Therefore prevalence of neck pain was 99.2%.

Table 1: VAS scores

Pain intensity	No. of students
No pain	4
Pain	496

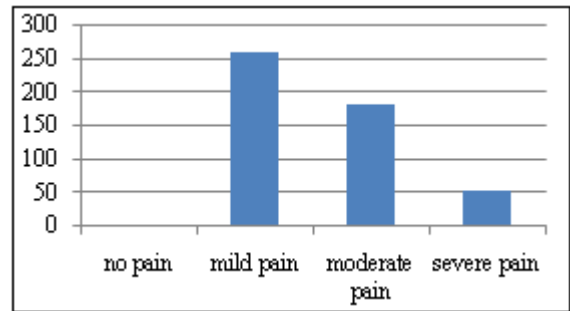


Graph 1: VAS scores

On further classification it was found that 4 (0.8%) students had no pain, 261 (52.2%) students had mild pain (0.5-4.4), 182 (36.4%) students had moderate pain (4.5-7.4), 53 (1.6%) students had severe pain (7.5- 10) (Table 2 and Graph 2). This intensity variable was used here as the measure of "neck pain intensity".

Table 2: VAS scores for no, mild, moderate and severe pain

Pain intensity	No. of students
No pain	4
Mild pain	261
Moderate pain	182
Severe pain	53

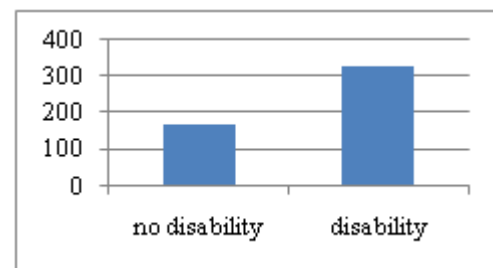


Graph 2: VAS scores for no, mild, moderate and severe pain

Out of 500 students NDI scores were: no disability in 171 (34.2%) students and disability in 329 (65.8%) students (Table 3 and Graph 3). Therefore prevalence of disability due to neck pain was 65.8%.

Table 3: NDI score

Disability	No. of students
No disability	171
Disability	329

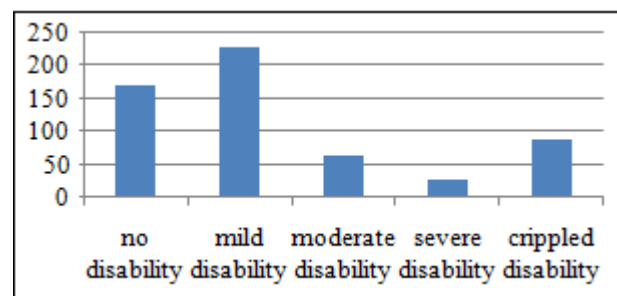


Graph 3: NDI score

On further classification it was found that 171 (34.2%) students had no disability, 228 (45.6%) students had mild disability (5-14), 65 (13%) students had moderate disability (15-24), 28 (5.6%) students had severe disability (25-34), 8 (1.6%) students had complete disability (> 35). (Table 4 and Graph 4)

Table 4: NDI scores: no, mild, moderate, severe, crippled disability

Disability	No. of students
No disability	171
Mild disability	228
Moderate disability	65
Severe disability	28



Graph 4: NDI scores: no, mild, moderate, severe, crippled disability

5. Discussion

Computers have become a necessity during the past few years. Its use is increasing enormously in office workers and students. There is a growing body of literature from multiple universities that has identified college students experiencing pain related to computer use.^[7]

Therefore our study aimed at finding the prevalence of neck pain and disability in students with prolonged use of computers.

Out of 500 college students 4 (0.8%) students had no pain whereas 496 (99.2%) students had pain as measured on VAS. Also the scores of Neck Disability Index (NDI) showed that 171 (34.2%) students had no disability whereas 329 (65.8%) students had disability due to neck pain.

This study reiterates the previous findings that musculoskeletal pain is a common phenomenon among young adults especially college students. The regions with the highest prevalence of pain were the neck (62%), wrists (52%), and shoulder (50%).^[8]

Many studies have investigated the prevalence of neck pain and / or work related musculoskeletal disorders in computer users, its risk factors and its impact on health.^[1,2,9,10,11,12,13,14] The results of our study are in accordance with other studies that neck pain is a significant problem in young adolescents with prolonged usage of computer.

Therefore, preventive measures like ergonomic advice, postural advice and demonstration of neck exercises are to be integrated in places (colleges, schools or workstations) of prolonged use of computers.

Engaging computer users in physical activity as part of their work day, frequent micro breaks of 30 seconds once every 20 to 40 minutes are an effective means to reduce neck pain and that these micro breaks have no adverse effect on worker productivity.^[2]

Ensuring that computer workstations are arranged to reduce neck flexion (use of document stands, screen height, etc.), use of appropriate chairs, and using rest breaks may help to prevent neck pain. Also the use of neck muscle exercises are useful in treating those who have developed neck pain.^[2]

6. Conclusion

Incidence of neck pain is very high in students with prolonged computer usage. But the incidence of the disability caused by it is not very high.

7. Future Scope

- 1) Correlation for severity of pain between students of different year (Iyr, IIyr, IIIyr etc) can be found.
- 2) Correlation between varied duration of computer use can be found.
- 3) Students from different departments can be approached for data collection.

References

- [1] Bart N Green et al, a literature review of neck pain associated with computer use: public health implications . J Can Chiroprac Assoc 2008; 52 (3)
- [2] Fazia sabeen et al, prevalence of neck pain in computer users, Annals Vol 19, Issue 2. APR-JUN 2013.
- [3] E. M. C. Lau et al, The prevalence of and risk factors for neck pain in Hong Kong Chinese, Journal of Public Health Medicine, Vol. 18, No. 4, pp. 396-399
- [4] Mark P. Jensen, Connie Chen, and Andrew M. Brugger. Interpretation of visual analog scale ratings and change scores: a reanalysis of two clinical trials of postoperative pain. J Pain 2003;4(7):407-14.
- [5] Vernon HT, Mior S. The neck disability index: a study of reliability and validity. J Manipulative Physiol Ther 1991;14:409-405.
- [6] Vernon H. The Neck Disability Index: state-of-the-art, 1991-2008. J Manipulative Physiol Ther. 2008;31:491-502.
- [7] Katz JN, Amick BC, Hupert N et al. Assessment of upper extremity role functioning in students. Am J Ind Med. 2002; 41:19-26.
- [8] Menendez *et al.* Upper Extremity Pain and Computer Use Among Engineering Graduate Students: A Replication Study. Am J Ind Med. 2009 February ; 52(2): 113-123.
- [9] Shah et al, Prevalence of neck pain in computer operators. NHL Journal of Medical Sciences. Jan 2015 Vol 4/ issue 1
- [10] Aysha Siddiqua Kalim Khan et al, Neck pain in computer users Panacea Journal of Medical Sciences, May-August, 2016;6(2): 88-91
- [11] Venkatesan rajagopal et al, The Prevalence of Computer-Related Musculoskeletal Pain Among College Students-a Cross-Sectional Study. American Medical Journal 2012; 3 (1): 33-36
- [12] Beibei Feng et al, Prevalence of work-related musculoskeletal symptoms of the neck and upper extremity among dentists in China, Feng B, et al. BMJ Open 2014;4:e006451
- [13] Rajinder Kumar Moom et al, Prevalence of Musculoskeletal Disorder among Computer Bank Office Employees in Punjab (India): A Case Study, Rajinder Kumar Moom et al. / Procedia Manufacturing 3 (2015) 6624 – 6631 .
- [14] Shabbir M. et al, Frequency of neck and shoulder pain and use of adjustable computer workstation among bankers Pak J Med Sci. 2016;32(2):423-426.

Author Profile



Yakshi Bhardwaj, student at Department of Physiotherapy, School of Medical and Allied Sciences, Galgotias University, Uttar Pradesh, India



Dr. Richa Mahajan (PT), Assistant Professor at Department of Physiotherapy, School of Medical and Allied Sciences, Galgotias University, Uttar Pradesh, India