Musculo skeletal Disorders associated with Computer Usage among Healthcare College Students : A preliminary report

Peer review status:
No

Corresponding Author:
Dr. Varun Singh,
Senior Resident , Deptt. Orthopedics, Lal Bahadur Shastri Hospital, Mayur Vihar, New Delhi, 110091 - India

Submitting Author:
Dr. J S Prakash,
Professor, CMC & Hospital, CMC & Hospital, Ludhiana, 141008 - India

Other Authors:
Dr. Deane A,
Associate Professor, Deptt. Orthopedics, Himalayan Instt. of Medical Sciences, HIMS, HIHT, Dehradun, UK, 248140 - India
Dr. Shiraz Bhatti,
Associate Professor, Deptt. Orthopedics, GGS Medical College, GGS Medical College, BFUHS, Faridkot, Pb., 151203 - India

Article ID: WMC004560
Article Type: Original Articles
Submitted on: 21-Feb-2014, 12:20:53 PM GMT   Published on: 21-Feb-2014, 03:08:33 PM GMT
Article URL: http://www.webmedcentral.com/article_view/4560
Subject Categories: ORTHOPAEDICS
Keywords: MSD's , computer usage , healthcare students , college students

How to cite the article: Prakash JS, Singh V, A D, Bhatti S. Musculo skeletal Disorders associated with Computer Usage among Healthcare College Students : A preliminary report. WebmedCentral ORTHOPAEDICS 2014;5(2):WMC004560

Copyright: This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC-BY), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Source(s) of Funding:
Self funded

Competing Interests:
None
Musculo skeletal Disorders associated with Computer Usage among Healthcare College Students: A preliminary report

Author(s): Prakash JS, Singh V, A D, Bhaty S

Abstract

Musculoskeletal disorders [MSD’s] following computer usage comprise a broad array of conditions: some well defined repetitive stress like conditions and others still being identified and investigated for their etiologic association. Available literature reports studies carried out mostly on IT or computer students or professionals and university/college students. We report our observations on healthcare students from 4 constituent colleges at Christian Medical College, Ludhiana, India.

Introduction

Today computer is a vital tool in every dimension of life. Life without some aid of computers is almost unimaginable for most people. Students, office users, housewives, almost everyone in any walk of life, including tiny tots are ever on some overt or embedded form of computer most of the time.

Musculoskeletal disorders [MSD’s] are injuries and disorders to muscles, nerves, tendons, ligaments, bones, joints, cartilages, and spinal discs. Examples are many types of strain, sprain, carpal tunnel syndrome, tendinitis, sciatica and low backache etc [12]. MSD’s result from bending, climbing, crawling, reaching overexertion and repetitive motions. Known also as ergonomic injuries and illnesses they present in multiple ways and forms: some old well defined repetitive stress conditions, others being defined and identified lately [4,9].

Review

Prevalence and/or incidences of computer usage related MSD’s are not reported in textbooks yet [16]. The work related musculoskeletal disorders [WMSD’s], some clinically defined as well as undefined, are products of accumulated effect of repeated traumas associated with labour risk factors [15,2]. Commonly acknowledged causes for these disorders are static body positions, repetitive motions, prolonged muscular contractions, and use of force [13,22].

CANS, complaints of arm, neck and shoulder: the term was introduced in Netherlands in early seventies. It is an important cause of work disability due to severe and debilitating features such as pain, numbness and tingling [1,7,4]

Among undergraduate college students in USA computer dependence has increased markedly during the last decade [8]. Many institutions in America as well as in India now require all new students to utilize a laptop computer. In India the central government and many state governments too are providing school students free computers or at greatly subsidized prices. Computer related discomfort in childhood and adolescence are of particular concern as the musculoskeletal and other systems are still developing. The young students may be at increased risk for developing disabling musculoskeletal disorders [17,20]. Thus with increased usage of computers comes the increased risk for students to develop upper extremity musculoskeletal disorders [UEMSD’s] besides ophthalmic and other MSD’s related to lower extremity and spine etc.

Prevalence

Out of 1544 students of an American university, over 50% had computer related musculoskeletal problems[11]. Among 204 of 250 students of an American college two thirds (67%) had experienced pain or discomfort in the neck, shoulders, arms, wrists, or fingers during or after working on a computer[8]. Schlossberg in a study of 206 engineering students in California reported 64% [132/206] students experiencing persistent or recurrent pain in any upper extremity after computer usage[17 ]. In a prospective study[14] at an American university with a study population of 30 participants 86% respondents reported experiencing upper extremity pain/discomfort. Among 116 American college students Jenkins et al reported over half [54%] had upper extremity pain following computer usage[10]. In 264 Dutch men and women one year prevalence of
CANS was observed at 54%[5]. Out of 250 men and women in Sudan prevalence of CANS was found to be 64%[6].

In India, among 200 IT professionals in Delhi, Suparna et al[19] found the prevalence of computer related MSD’s to be 77.5%. In Gujarat with a sample size of 400, overall prevalence of any MSD was 75.2%[3]. In another study conducted in Delhi among 200 computer professionals prevalence of musculoskeletal problems was 76.5%[21].

**Material & Methods**

In the absence of any study on MSD’s among health care students [16] following computer usage a prospective study was undertaken in the department of orthopaedics, Christian Medical College & Hospital, Ludhiana, Punjab, India. It was conducted between 2010 and 2012 on health care college students of 4 constituent colleges viz. Christian Medical College [CMC], Christian Dental College [CDC], College of Nursing [CON], and College of Physiotherapy [COP] at CMC. As per inclusion and exclusion criteria a total of 242 medical, dental, nursing and physiotherapy students were enrolled initially. 27 students were lost to follow up. 215 health care college students were followed up until end of study with a minimum follow up of 6 months.

Inclusion criteria were: Health care students both undergraduates and postgraduates from colleges named above who were using computers for minimum of 07 hours per week on an average for minimum 1 year. Those students who had pre-existing musculoskeletal disorders due to causes other than computer usage or previous trauma were excluded.

After obtaining informed consent observation data were collected based on an approved protocol, examination and responses to MUEQ [ Maastricht Upper Extremity Questionnaire ], and SMFA [ Short Musculoskeletal Functional Assessment ] revised and modified as per need of study [5,6 ].

**Results & Analysis**

Of 215 health care students who were followed up, 102 [47.4%] belonged to CMC, 03 to CDC, 63 [29.3%] to CON, and 47 [21.9%] to COP. 153 [71.2%] were undergraduates and 62 [28.8%] were graduates i.e. post graduate students. Age of 215 participants ranged from 18 to 33 years, mean age 21.97 years. Maximum number of students 56 [26%] were 22 yrs followed by 21 yrs [46 ] Only 1 student was 33 years old. There were 145 females [67.4%] and 70 [32.6%] males, ratio 2.07:1 .

Among 215 health care students 120 were found to be afflicted with MSD’s due to computer usage : 95 were asymptomatic. Thus, the prevalence was 55.81%.

**Discussion**

Among other studies 6 have computer professionals as their subjects [5,6,18,19,3,21]. 8 studies have university/college students but none with health care students as subjects. An entire study population comprised of graduate engineering students [Table 1]. In our study all subjects were health care college students. Among 120 symptomatic health care students nearly two third [ 65% ] were undergraduate students and 35% were graduates.

In various studies subjects age ranged from 18 to 55 years with mean age range between 25 and 29.86 years. The present study depicts youngest subject population with age range 18–33 and mean age 21.97 years.

In most of the studies males far outnumbered females. Of 215 students female to male ratio was 2.07:1. However among symptomatic 120 students 30 were male and 90 were female with symptomatic female to male ratio 3:1. The higher prevalence of musculoskeletal disorders among females was statistically significant [ p value 0.007 ].

The prevalence of computer associated MSD’s among various studies ranged from 51% to 84%. Among health care students prevalence of MSD’s was found to be 55.81%. Higher prevalence in other studies may be attributable to greater use of computers by university/college students in western world. Relatively lower prevalence in comparison to Indian studies could be due to the fact that those studies were carried out on computer/IT professionals.

**Conclusion**

The first of its kind study on MSD’s associated with computer usage among 215 health care college students in north India found prevalence at 55.81% with significant female predominance.

**Bibliography**

1. Bergqvist U, Wolgast E, Nilsson B et al:


Illustrations

Illustration 1

Table 1: Prevalence

<table>
<thead>
<tr>
<th>S.No</th>
<th>Authors</th>
<th>Year</th>
<th>Prevalence</th>
<th>N</th>
<th>Type of subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>International</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Katz et al</td>
<td>2000</td>
<td>51%</td>
<td>1544</td>
<td>University students</td>
</tr>
<tr>
<td>2</td>
<td>Hupert et al</td>
<td>2004</td>
<td>67%</td>
<td>204/250</td>
<td>College students</td>
</tr>
<tr>
<td>3</td>
<td>Schlossberg et al</td>
<td>2004</td>
<td>64%</td>
<td>132/206</td>
<td>Engineering students</td>
</tr>
<tr>
<td>4</td>
<td>Eltayeb et al</td>
<td>2007</td>
<td>54%</td>
<td>264</td>
<td>Computer office workers</td>
</tr>
<tr>
<td>5</td>
<td>Jenkins et al</td>
<td>2007</td>
<td>54%</td>
<td>116</td>
<td>College students</td>
</tr>
<tr>
<td>6</td>
<td>Menendez et al</td>
<td>2007</td>
<td>86%</td>
<td>30</td>
<td>University students</td>
</tr>
<tr>
<td>7</td>
<td>Eltayeb et al</td>
<td>2008</td>
<td>64%</td>
<td>250</td>
<td>Mobile company workers</td>
</tr>
<tr>
<td></td>
<td><strong>Indian</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Suparna et al</td>
<td>2005</td>
<td>77.5%</td>
<td>200</td>
<td>IT professionals</td>
</tr>
<tr>
<td>2</td>
<td>Sharma et al</td>
<td>2006</td>
<td>77.5%</td>
<td>200</td>
<td>IT professionals</td>
</tr>
<tr>
<td>3</td>
<td>Bhanderi et al</td>
<td>2007</td>
<td>75.2%</td>
<td>315/419</td>
<td>Computer operators</td>
</tr>
<tr>
<td>4</td>
<td>Talwar et al</td>
<td>2009</td>
<td>76.5%</td>
<td>153/200</td>
<td>Computer professionals</td>
</tr>
<tr>
<td></td>
<td><strong>Present study</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prakash et al</td>
<td>2014</td>
<td>55.81%</td>
<td>120/215</td>
<td>Health care students</td>
</tr>
</tbody>
</table>