A CROSS SECTIONAL STUDY TO DETERMINE THE PREVALENCE OF COMPUTER RELATED HEALTH PROBLEMS AMONG STUDENTS OF INFORMATION TECHNOLOGY IN VARIOUS COLLEGE OF SURAT CITY

Ankita Bansal¹, Rakesh Bansal¹, Shailesh Prajapati², Pankaj Prajapati³

¹Assistant Professor, Udhna Academy College of Computer App. & I.T. Surat, Gujarat
²Reliance Industries Ltd, Surat, Hazira
³Assistant Professor, Department of Community Medicine, GMERS Medical College, Gotri, Vadodara

ABSTRACT

BACKGROUND: Computers have become an indispensible part of modern life, being used in every aspect of life. Technological advancement has ushered in a new genre of occupational health problem. Purpose of this study was to determine the prevalence of computer related health problems among students of information technology in various college of Surat city. MATERIALS AND METHODS: A institute based cross sectional study of 290 selected students of information technology in various college of Surat city between 1st August to 15th December 2010 was studied. Relevant data was collected using an interviewer-administered questionnaire. RESULTS: The study revealed the prevalence of the symptoms like watering in eyes, eye strain, back pain, shoulder pain, neck pain and many other problems which were common among the students and become more persistent with the increase in hours of work. This study will help in identifying of such symptoms among young population currently studying in college. This study also examined gender variations. CONCLUSION: The study proposed that the computer students must be aware about health related hazards and should be educated and trained for ergonomically conducive environment.

Keywords: Computer Usage, Musculoskeletal Problem, Visual Problems

INTRODUCTION

Computers have become an indispensible part of modern life, being used in every aspect of life. Technological advancement has ushered in a new genre of occupational health problem, i.e. of computer related health problems. India being the forerunner in the cyber world the occupational health problems is slowly awakening to this group of modern occupational diseases, which are slowly taking its roots among the information technology (IT) professionals. These problems if ignored can prove debilitating and can cause crippling injuries forcing one to change one's profession.¹² It can also influence the performance of a student and hence in all the society also has to bear the cost. There is an urgent need to understand the nature of these problems and prevent it from assuming epidemic proportions.

*Corresponding Author

Ankita R Bansal
Assistant Professor,
Udhna Academy College of Computer App. &
I.T. Surat, Gujarat, India
E mail: ankita_leo3@yahoo.com

With young children being introduced to computers much early on in life, it is all the more important to be aware of the problems and follow necessary preventive steps to check the progression of computer related health problems. The present study was done to assess the magnitude of these occupational problems among the IT students. Most of occupational health related problems involve repetitive or forceful movements and the maintenance of constrained or awkward postures have been associated with such a musculoskeletal disorder.³ The condition is characterized by discomfort and persistent pain, numbness, restricted movement and weakness in or around muscles and tendons of the back, neck, shoulders, elbows, wrists, hands, or fingers. These situations may thus affect the quality of life of the persons.⁴ The acceptable trend in a normal working environment is consistent with the fact that more elements are becoming computerized and more people are using visual display terminals (VDT) and related equipment to complete their work. Computer users adopt postures whereby the neck, shoulders and upper limbs remain in static positions for extended hours.⁵,⁶ The more time spent on this type of activity, the higher the risk of developing such injuries. This fixed position also causes lower back pain due to the increased pressure on the vertebra
while sitting. The sitting position, the type of chair, and use of footrest also affect the lower back.  

MATERIALS AND METHODS
The present analytical study is an institute based cross sectional study to determine the prevalence of health problems among students of information technology in various college of Surat city. Participants of this study were interviewed to collect information related to their personal characteristics like age, sex, educational status, residence, availability of personal computer, amount of time spent on computer, work practice, size of the visual display device (VDU), relevant health problems and work environment etc.

Study period: 1st August to 15th December 2010
Study type: Institutional based cross sectional study

Data collection method:
Sampling technique: Purposive sampling technique

Inclusion criteria:
1. Study participant should enrolled under UACCAIT/ Smt. Tanuben and Dr. Manubhai Trivedi college of Information Science
2. Minimum work exposure of 3 months
3. Provide verbal consent

Exclusion criteria:
1. Study participants that were absent on the interview day
2. study participant not enrolled under VNSGU
3. study participants not given consent for interview

Sample size: All students of the two colleges UACCAIT/ Smt. Tanuben and Dr. Manubhai Trivedi college of Information Science of Surat were selected and they were 290 students.

Data processing and analysis
The data was computerized using Microsoft Excel 2007. Data analysis and interpretation of tables were done using Epi Info version 6 (Centres for Disease Control, Atlanta, GA), SPSS version 15.0 (Statistical package for Social Science) of Department of Statistics, Veer Narmad South Gujarat University, Surat and appropriate tests were applied.

RESULTS
The present study includes the 290 IT student enrolled under two colleges of Surat city. Table 1 shows the age wise and sex wise distribution of the study participants. Male to female ratio among information technology students was around equal (1:1). Around 9 out of 10 students belong to the age group between 18 - 20. Around 6 percent of the students having age less than 18 year and more than 20 year respectively. In further distribution 50% of boys belong to 18 year of age followed by 26%, 13% of age 19 and 20 respectively. In further distribution of female age wise; 4.6% of female were of 17 years, 29.60% were of 18 years, 34.80% were of 19 years, 25% were of 20 years and 5.9% were of 21 years and above.

Table 2 shows the distribution of eye problems according to the gender. Proportion of the eye complains or problems were higher among girls than boys. Headache (67.6), Eye strain (66.9), dryness of eye (57.6), watering from eye (53.8), irritation of eye (51.7) redness of eye (33.8) followed by changes in visual acuity (change in clear vision or complain of blurring of vision) is 16.9 percent are the most common eye problems among students of information technology. In another way result shows that every 7 out of 10 students are having complain of eye strain. The distribution of the eye strain among the female is higher than the male student (38.7 Vs 61.3). The male to female ratio among the student suffering from eye strain is around 1:2. Dry eye is another issue.
among the IT professionals. Dryness of the eyes is second most common eye problems that are prevalent in student working over computers. The result shows the ratio of 2:3 students complaining of dry eye among male and female student. Around 6 out of 10 the students are having complain of dry eye. Complain of redness in eye is also reported by student.

Table 3 shows the gender wise distribution of musculoskeletal problems among students (n=290)

<table>
<thead>
<tr>
<th>Musculoskeletal problems</th>
<th>Gender</th>
<th>Total No (%)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Male No (%)</td>
<td>Female No (%)</td>
</tr>
<tr>
<td>Neck pain</td>
<td>76 (55.0)</td>
<td>97 (63.8)</td>
</tr>
<tr>
<td>Shoulder pain</td>
<td>66 (47.8)</td>
<td>97 (63.8)</td>
</tr>
<tr>
<td>Elbow pain</td>
<td>56 (40.6)</td>
<td>64 (42.1)</td>
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<tr>
<td>Wrist pain</td>
<td>55 (39.9)</td>
<td>62 (40.8)</td>
</tr>
<tr>
<td>Numbness/tingling over hand</td>
<td>61 (44.2)</td>
<td>92 (60.5)</td>
</tr>
<tr>
<td>Finger pain</td>
<td>69 (50.0)</td>
<td>100 (65.8)</td>
</tr>
<tr>
<td>Lower backache</td>
<td>73 (52.9)</td>
<td>104 (68.4)</td>
</tr>
<tr>
<td>Leg pain</td>
<td>28 (20.3)</td>
<td>82 (53.9)</td>
</tr>
<tr>
<td>Thigh pain</td>
<td>47 (34.0)</td>
<td>59 (38.8)</td>
</tr>
<tr>
<td>Knee pain</td>
<td>32 (23.1)</td>
<td>80 (52.6)</td>
</tr>
<tr>
<td>Numbness/tingling over hand</td>
<td>27 (19.6)</td>
<td>44 (28.9)</td>
</tr>
<tr>
<td>Burning feet</td>
<td>45 (32.6)</td>
<td>61 (40.1)</td>
</tr>
</tbody>
</table>

Every three student out of 10 registered student having complain if of redness in eye either in one or both eye. Only few students have reported complain of change the visual acuity or complain of blurring of vision or decrease the clarity over the VDUs. Every 5th student is having complain of dimness of vision. Study result shows that every second student complaining irritation or itching over eye after sitting a long period of time over computer. Various literatures says that Intensive computer work puts stress and strain on muscles, as well as joints, because of continuous and repetitive nature of movements lead to musculoskeletal disorder. Table 3 shows the gender wise distribution of musculoskeletal disorder (MSD) among students of computer professional. The most common symptoms of musculoskeletal disorder are neck pain, shoulder pain, pain over elbow joint, pain over wrist joint, tingling and numbness over fingers, backache, pain over thigh, leg pain, knee joint pain, burning feet and neurological complain over feet etc. around every sixth student reported complain of neck pain. Female shows higher prevalence of neck pain than boys (64 %Vs 53%). Pain over finger, shoulder, 58 % and 56 % are the most prevalent musculoskeletal problems in upper limb. Other upper limb reported complain are neurological deficit over hand and fingers (52%). Every second student reporting complains of musculoskeletal disorders. Lower backache is another issue prevalent among computer professionals. Almost 6 out of 10 student reporting backache, girls are reporting more than boys (68.4%Vs 52.9%). Around 40 % of students complain of pain over thigh, leg, knee joint. Tingling in the lower extremities was reported by not more than 25% of respondents.

DISCUSSION

In the present study, the age of the participants varied from 17 to 22 years with mean age of 18.83 ±1.02 years. In present study mean age of female participant was higher than male (18.99 Vs 18.67). Male to female ratio among information technology students was around equal (1:1). The age profile is contrast to Indian study reported mean ages of 25.4 years in computer professionals.8 In our study median age of study participants were 19 year in contrast to study in which subjects with median age 27 years.9 While Choudhary SB, had subjects with mean age 29±6 years.2 In our study female participants are outnumbered compared to male participants that show the similar trend of west where female workers outnumber male.

We studied visual problems among students of information technology in Surat city. Nearly two thirds of study participants reported visual problem. Magnitude of visual problems was found to be directly related to average computer hours per day. Therefore, the subject may deviate from the neutral posture to get a clear vision of the screen. This deviation may cause MSDs. Our study shows the concordant results to the study done by showing similar results.10 In our study prevalence of headache was 67% which is discordant to the other studies.11,12 In previously mention two studies having prevalence of headache was less (29.2%). The prevalence of various computer related problems is not only dependent on the years of exposure but also on the environment of the
working place and posture adopted. Sources of information such as internet, seminars, and lectures can help in raising the awareness rates regarding computer-related problems. This could mean that putting emphasis on ergonomic conditions under which computer-related work is being performed, can go a long way in reducing the burden of visual problems.

In our study prevalence of self reporting symptoms of musculoskeletal disorder was 25.0 to 60.0 %. The result of our study concordant to the study done by Dinesh Bhanderi shows prevalence of self-reported symptoms related to MSD ranged from 0.7-34.8%.13 Overall prevalence of any MSD was 75.2% (315/419). Armstrong TJ, 1993 had reported MSD prevalence of 25-76% among video display unit (VDU) operators in his study.14 Thus, our study suggests that MSDs are a common problem among those who use computer intensively. It seems likely that long hours of working on computers and presence of refractive error may result in these problems. Future longitudinal studies should evaluate the relative importance of other individual factors like age, gender, habit of doing exercise and taking breaks. Results from such epidemiological studies can contribute to the development of appropriate hazard-prevention programs for student who frequently use computer.

CONCLUSION
In conclusion, nearly three fourths of the computer professionals we studied had mentioned to have some computer-related health problems. This is a significant proportion and denotes that the occupational health of the people working in the computer field should be emphasized as a field of concern in public health. The ergonomics of the working environment of the computer professionals have a direct impact on their well being. Hence the organizations employing them, as well as the professionals themselves need to be sensitized regarding the importance of the regular health checkups and proper working conditions.

LIMITATION
Limitation of our study was that it was a purposive sampling and we took only student of only two college out of 8 college enrolled under VNSGU university. Out of two colleges one college is having only women student. There may be other factor that might influence the health problem and pre existing diseases are not controlled.

REFERENCES