

Work-Related Health Disorders among Computer Users

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INTRODUCTION

The use of computers and digital electronic devices, video display terminals, including e-mail, internet access and entertainment is almost universal in modern society. Computers have become key tools in virtually every aspect of work and learning, from managerial activities to document preparation and electronic communication. The applications of computer technology are revolutionizing the workplaces worldwide, and their use will continue to grow in the future.

Computer users are constantly exposed to various occupational risks, such as the awkward and unsafe postures, longer hours in front of the computers without giving importance to their health, high levels of job strain, repetitive finger movements, utilization of software with poor usability, work related stress, repetitious tasks, boredom, interpersonal factors and poor design of workstation.

use of computers can contribute to health damage such as insomnia, cumulative trauma disorders of extremities, back pain and musculoskeletal disorders, computer vision syndrome, asthenopia, consequences of stress, psychological disorders, that negatively affects operators' tasks efficiently, performance, and productivity.

It is estimated that, worldwide, 25% of computer users are already suffering from computer related injuries. The each state has to shell out a lot of money annually for having ignored these computer related problems

The aim

The aim of this article is to examine the prevalence of health disorders and to estimate the work ability index among the computer users.

METODOLOGY

A total of 152 computer users, aged 25-50 years, was divided into two groups according to the length of computer work during the day. The group 1 consisted of 82 computer users who work longer than four hours per day. The group 2 consisted of 70 computer users who work less than four hours per day.

RESULTS

There was no statistically significant differences between these two examined groups in relation to the age ($38,4 \pm 9,1$ in group 1 vs. $39,7 \pm 8,9$ years in group 2) and the duration of occupation ($15,9 \pm 4,8$ vs. $16,2 \pm 3,9$ years) ($p > 0,05$). Computer work duration in the group 1 ($8,15 \pm 1,12$ hours/day; $42,11 \pm 3,08$ hours per week; $5,21 \pm 0,08$ working days per week) is significantly higher than in the group 2 ($1,61 \pm 0,42$ hours/day; $8,91 \pm 0,92$ hours per week; $4,95 \pm 0,09$ working days per week) ($p < 0,0001$).

Vision and musculoskeletal disorders, work-related symptoms and addiction to computers are statistically significant more common in the group 1 than in the group 2 of computer users ($p < 0,0001$).

The following types of visual disorders more often are presented in group 1 compared to group 2 : short-sighted (30,2% vs. 1,2%); long-sighted (12,6% vs. 0,6%); red eyes (10,9 % vs. 0,6 %); dry eyes (31,3 % vs. 10,5 %); changes in visualizing colours (11,5 % vs. 0,6 %) and pain around the eyes (29,1 % vs. 1,2 %) ($p < 0,0001$).

group 1 compared to group 2: shoulder (46,1 % vs. 19,9 %); elbow (21,4 % vs. 1,16 %); wrist/hand (25,27 % vs. 1,75 %); upper back (11,53 % vs. 0,58 %); low back (57,1% vs. 19,8 %); neck (22,5 % vs. 1,75 %) and leg (14,3 % vs. 0,58 %) ($p < 0,0001$).

Significantly more incidence of work-related general symptoms are presented in group 1 compared to group 2: headache (23,07 % vs. 1,75 %); general body fatigue (35,1 % vs. 11,1 %); lack of concentration (13,73 % vs. 0,6 %) and sensitivity to light (14,8 % vs. 0,6 %) ($p < 0,0001$).

According to anatomical areas of the body, significantly more prevalence of musculoskeletal disorders are presented in group 1 compared to group 2: shoulder (46,1 % vs. 19,9 %); elbow (21,4 % vs. 1,16 %); wrist/hand (25,27 % vs. 1,75 %); upper back (11,53 % vs. 0,58 %); low back (57,1% vs. 19,8 %); neck (22,5 % vs. 1,75 %) and leg (14,3 % vs. 0,58 %)($p < 0,0001$).

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Addiction to computers are presented at 31(17,03%) computer users in group 1 which is significantly more than in group 2 (2,34 %) ($p < 0,0001$).

Unsafe ergonomic solutions, longer exposure time, addiction to computers, work related vision and musculoskeletal disorders significantly reduce work ability of computer users.

The factors associated with the degree of working ability reduction are the duration of occupation service, daily computer usage, unsafe ergonomics solutions and health disorder.

The significant finding of this study is that those who had the work related symptoms, health disorders and reduced working ability are those who used computers for more than four hours per day.

DISCUSSION

These results indicated a causal relationship between computer work and musculoskeletal disorders and complaints. The commonest risk factors for musculoskeletal disorders are awkward posture due to poorly designed seating devices that lack adjustable seat heights and back rests, and repetitive nature of tasks. Similar results are presented by the other authors who point out the importance of preventive measures in their reduction. However, the application of ergonomics principles to office workstations will reduce such health risks. For example, one of the goals of the ergonomic processes is to design or modify people's work and other activities to be within their capabilities and limitations.

The authors argue that the use of computer monitors in an ergonomic position - one arm distance or 40 inches away with a downward gaze of 14° or more appears to help relieve the symptoms of computer vision syndrome.

According to Occupational Safety and Health Administration, the preferred viewing distance is 20-40 inches and the letter size may be increased for smaller monitors. In the older guidelines for work with video display terminals the safe distance from the computer screen was between 45 and 70 cm. The monitor should be kept directly in front of the user's chair so that the head, neck and body face forward when viewing the screen. It should not be farther than 35° to the left or right.

It is recommended that while working from printed material, the monitor should be placed slightly to the side and the printed material kept directly in front. The printed material and monitor should be kept as close as possible to each other. Viewing the computer screen from a distance (48.42 and 65.33 cm) causes more accommodation and convergence among people working with computers than those who do not work behind computer screens

The significant finding of this study is that those who had the work related symptoms and health disorders are those who used computers for more than four hours per day, which was similar in the other studies with comparable results.

These results indicate that unsafe ergonomic solutions, longer exposure time, addiction to computers, work related vision and musculoskeletal disorders significantly reduce work ability index.

Work ability implies the physical and intellectual resources that workers can rely on so as to cope with the emotional, cognitive, and physical demands posed by their work.

Work ability correlates with multiple factors, especially socio-demographic and occupational characteristics. Age, job demands, sex, responsibility for both work and household duties, type of employment (part-time employment or full time employment), having family support, body mass index, educational level, smoking habits and physical activity during leisure time has a substantial effect on working ability. Our previous investigation showed a significant effects of occupational stress on working ability of exposed workers .

CONCLUSION

Vision and musculoskeletal disorders, work-related symptoms and addiction to computers are statistically significant more common in computer users who work longer than four hours per day.

Unsafe ergonomic solutions, longer exposure time, addiction to computers, work related vision and musculoskeletal disorders significantly reduce work ability of computer users.

These results indicate the need for application and the type of preventive measures and activities that must be applied in order to protect the health and working ability of computer users