



Relationship between ergonomic parameters and ocular symptoms among computer users

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Introduction

The increased use of visual display terminals (VDTs) has led to numerous reports of visual discomfort and reduced visual performance.¹⁻⁶ The causes for the visual symptoms are a combination of individual visual problems and poor office ergonomics. Poor office ergonomics can be further divided into poor workplace conditions and improper work habits.^{1,7}

With this study we intend to evaluate and characterize the symptoms associated with the use of computers, identify the shortcomings of ergonomic factors and relate the ergonomic guidelines adopted with the symptoms resulting from the use of VDTs.

Materials and Methods

Fifty computer users took part in this study and were recruited from the university students. It was performed a survey with questions about demographic information (age, sex), use of corrective lenses (type of correction and frequency of wearing), and computer use habits (e.g., number of hours per day of use, frequency and length of breaks taken). The incidence of the most common symptoms of the CVS described in the literature were assessed. These symptoms included blurred vision at far and near distance, diplopia, asthenopia, headache, dry or irritated eyes and photophobia.

Results

- Fifty subjects voluntarily participated in this study, 41 (82.0%) females and 9 (18.0%) males. The mean and standard deviation of subjects' age were 21.60 ± 2.00 years.
- 58% (n=29) of the sample did not use any type of correction (glasses or contact lens), 20% (n=10) used correction during the use of the computer, 20% (n=10) always used and remaining 2% (n=1) used only in tasks at distance.

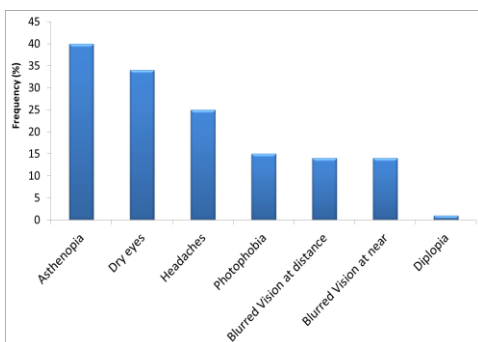


Figure 1. Frequency of the studied symptoms.

- For all the ocular symptoms evaluated, asthenopia (p=0.000) and dry eyes (p=0.014) were showed a statistically significant relation to gender. In addition, females complain more than male.

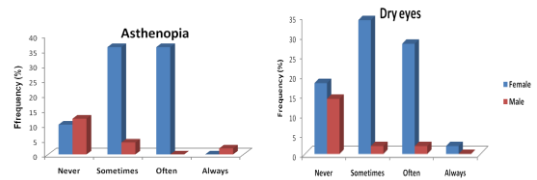


Figure 2. Frequency of symptoms related to gender .

- On average, the subjects worked 3.4 hours per day with the computer doing 2 pauses of 10.3 minutes each. No correlation was found between the symptoms assessed and the number of daily hours of computer work.
- There was statistically significant difference between the number of breaks taken and the symptoms evaluated, particularly the blurred vision at distance (p= 0,020). No relation was found between the symptoms assessed and the duration of the breaks.
- The symptoms appear 2.4 hours after subjects begin to work with the computer, being asthenopia (p=0.000) the symptom that appears early.
- Most of the subjects (58.0%) indicated that they did not feel any symptoms when not using a computer (holidays, weekends).
- There was not found a statistically significant relationship between the type of monitor used and the symptoms assessed, although the participants in this study mostly use the LCD (96%) compared to CRT (2%).
- Statistically significant differences were demonstrated between the evaluated symptoms and its interference in the productivity of the work, especially, asthenopia and headache.

Conclusions

It is important to note that, although causes for the inefficiencies and the visual symptoms are a combination of individual visual problems and poor office ergonomics, our study showed that ergonomic factors have a great impact on symptoms associated with the use of computers.

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