



COMPUTER VISION SYNDROME

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ABSTRACT

In this modern world everywhere we can see each and every individual either with an computer or mobile phone, this may make many works simpler, time saving, etc but on the other side there is also certain ill effects, among that one of the major problem that is increasing silently is “Computer Vision Syndrome”

Research shows that between 50% and 90% of people who work at a computer screen have at least some symptoms. According to the US National Institute for Occupational Safety and Health, computer vision syndrome affects about 90% of the people who spend three hours or more a day at a computer.^[2] Another study in Malaysia was conducted on 795 university students aged between 18 and 25. The students experienced headaches along with eyestrain, with 89.9% of the students surveyed feeling any type of symptom of CVS.^[3] Americans spend an average of 8 hours a day in front of a screen, whether that be a television screen, phone/tablet, or a computer screen^{[4][5]}. This has increased the prevalence of individuals affected by computer vision syndrome.

Working adults aren't the only affected. Kids who stare at tablets or use computers during the day at school can have issues, too, especially if the lighting and their posture are less than ideal. It is not an single problem but it is a group of problems associated with it and it may also vary from each individual.

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INTRODUCTION

Definition

Computer Vision Syndrome, also referred to as Digital Eye Strain, describes a group of eye and vision-related problems that result from prolonged computer, tablet, e-reader and cell phone use. Many individuals experience eye discomfort and vision problems when viewing digital screens for extended periods. The level of discomfort appears to increase with the amount of digital screen use.

Prevalence

- There are more than 10 Millions visits to eye doctors every year for CVS related problems
- If you spend more than 2 hours daily in front of computer you have 90% chance to develop CVS
- Without proper vision correction, worker productivity can decrease by as much as 20%
- Computer eyestrain is the first computer related complaint
- Workers in western countries spend 6 hours using a computer, what gives 1548 hours yearly

- 16 new patients are treated each month by Ophthalmologists.

Causes

There are a number of factors that determine the amount of strain your body feels as you work on a computer or other digital device, including lighting in the room, distance from the screen, glare on the screen, seating posture, and the angle of your head – not to mention any existing vision problems you may have. One or all of these may combine to cause an uncomfortable amount of strain on your eyes.

Uncorrected vision problems can increase the severity of Computer Vision Syndrome or Digital Eye Strain symptoms.

How Do Computers Affect Vision

When you work at a computer, your eyes have to focus and refocus all the time. They move back and forth as you read. You may have to look down at papers and then back up to type. Your eyes react to changing images on the screen to create so your brain can process what you're seeing. All these jobs require a lot of effort from your eye muscles. And to make things worse, unlike a book or piece of paper, the screen adds contrast, flicker, and glare.

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Computer work gets harder as you age and the lenses in your eyes becomes less flexible. Somewhere around age 40, your ability to focus on near and far objects will start to go away.

Signs and Symptoms

The most common symptoms associated with Computer Vision Syndrome (CVS) or Digital Eye Strain are

- Eyestrain/ Eye fatigues
- Irritation of eyes/ Itching / burning of eyes.
- Headaches
- Blurred vision
- Dry eyes
- Neck /shoulder/ arm/ wrist / back pain
- General fatigue
- Tension
- Tearing of eyes

Diagnostic Evaluation

Computer Vision Syndrome, or Digital Eye Strain, can be diagnosed through

- Patient history to determine any symptoms the patient is experiencing and the presence of any general health problems, medications taken, or environmental factors that may be contributing to the symptoms related to computer use.
- Visual acuity measurements to assess the extent to which vision may be affected.
- A refraction to determine the appropriate lens power needed to compensate for any refractive errors (nearsightedness, farsightedness or astigmatism).
- Testing how the eyes focus, move and work together. In order to obtain a clear, single image of what is being viewed, the eyes must effectively change focus, move and work in unison. This testing will look for problems that keep your eyes from focusing effectively or make it difficult to use both eyes together.

Treatment

Eyeglasses

Eyeglasses or contact lenses prescribed for general use may not be adequate for computer work. Lenses prescribed to meet the unique visual demands of computer viewing may be needed. Special lens designs, lens powers or lens tints or coatings may help to maximize visual abilities and comfort.

Vision Therapy

Some computer users experience problems with eye focusing or eye coordination that can't be adequately corrected with eyeglasses or contact lenses. A program of vision therapy may be needed to treat these specific problems. Vision therapy, also called visual training, is a structured program of visual activities prescribed to improve visual abilities. It trains the eyes and brain to work together more effectively. These eye exercises help remediate deficiencies in eye movement, eye focusing and eye teaming and reinforce the eye-brain connection. Treatment may include office-based as well as home training procedures.

Prevention

Some important factors in preventing or reducing the symptoms of CVS have to do with the computer and how it is

used. This includes lighting conditions, chair comfort, location of reference materials, position of the monitor, and the use of rest breaks.

Viewing the Computer



- **Location of computer screen:** Optimally, the computer screen should be 15 to 20 degrees below eye level (about 4 or 5 inches) as measured from the centre of the screen and 20 to 28 inches from the eyes.
- **Reference materials:** These materials should be located above the keyboard and below the monitor. If this is not possible, a document holder can be used beside the monitor. The goal is to position the documents so you do not need to move your head to look from the document to the screen.
- **Lighting:** Position the computer screen to avoid glare, particularly from overhead lighting or windows. Use blinds or drapes on windows and replace the light bulbs in desk lamps with bulbs of lower wattage.
- **Anti-glare screens:** If there is no way to minimize glare from light sources, consider using a screen glare filter. These filters decrease the amount of light reflected from the screen.
- **Seating position:** Chairs should be comfortably padded and conform to the body. Chair height should be adjusted so your feet rest flat on the floor. If your chair has arms, they should be adjusted to provide arm support while you are typing. Your wrists shouldn't rest on the keyboard when typing.
- **Blinking:** To minimize your chances of developing dry eye when using a computer, make an effort to blink frequently. Blinking keeps the front surface of your eye moist.
- **Give your eyes a break:** Follow the **20-20-20 rule**. Look away from the screen every 20 minutes or so and look at something around 20 feet away for about 20 seconds.(or) "20 20 20 rule":^[6] every 20 mins, focus the eyes on an object 20 feet (6 meters) away for 20 seconds. This basically gives a convenient distance and timeframe for a person to follow the advice from the optometrist and ophthalmologist. Otherwise, the patient is advised to close his/her eyes (which has a similar effect) for 20 seconds, at least every half-hour
- **Tweak your settings:** You don't have to live with the factory-installed presets if you're uncomfortable. Adjust the brightness, contrast, and font size until you find what's best for you.

Computer Vision Syndrome

- **Periodic Examination:** Visit your eye doctor regularly for exams and to keep your prescriptions up to date.

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