

## An Ergonomic and Visual Health Survey to Check the Prevalence of Computer Vision Syndrome among Computer Users in I.T. Professionals

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### ABSTRACT

This study investigates the impact of prolonged computer use on the visual and musculoskeletal health of IT professionals, drawing insights from a detailed ergonomic and visual health questionnaire. The findings reveal a high prevalence of symptoms associated with Computer Vision Syndrome (CVS), with 117.72% of respondents reporting extra-ocular complaints such as headaches, neck pain, and backache often overlapping with other symptom domains. Accommodative or asthenopic symptoms like eyestrain, dry eyes, and irritation were reported by 87.33%, while ocular surface issues such as burning and watery eyes affected 40.51%. Visual problems including blurred vision, double vision, and glare sensitivity were noted by 31.68% of participants. The most frequently reported individual symptoms were eyestrain (50.62%), backache (37.99%), neck pain (34.17%), shoulder pain (24.03%), and headaches (21.53%). Ergonomic assessments showed that 37.99% of users maintained a viewing distance of 10–20 inches, and 64.55% aligned their monitor tops with eye level, yet 70.13% lacked glare filters and 19.62% noticed screen flicker. Lighting conditions were suboptimal, with 44.94% relying solely on fluorescent overhead lighting and 77.85% rating brightness as medium. Curtains were the most common form of window light control (64.58%). Work habits varied, with 34.18% taking informal breaks and 14.55% working continuously without rest. Screen maintenance was inconsistent—only 23.33% cleaned their screens daily, while 59.76% did so rarely. Regarding visual correction, 39.24% wore glasses, predominantly single-vision lenses (58.73%), which may not be optimized for intermediate screen distances. These results underscore the multifactorial nature of CVS, linking poor ergonomic setups, inadequate lighting, and insufficient visual hygiene to both ocular and musculoskeletal discomfort. The study advocates for a multidimensional preventive approach, including ergonomic workstation adjustments, regular breaks, improved lighting, and customized optical aids to mitigate CVS and enhance occupational well-being among IT professionals.

**Keywords:** Backache, Computer Vision Syndrome, Ergonomic, IT professional, Eyestrain.

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### INTRODUCTION

In recent years, prolonged use of computers in I.T. professional environments has sparked growing concern among researchers and occupational health experts. As digital tasks become integral to nearly every sector, understanding the relationship between computer usage habits and their effects on physical and visual health has gained critical importance. The following analysis is derived from a detailed questionnaire designed to assess various ergonomic and visual parameters associated with computer-based work.

#### 1. Duration and Experience of Computer Use

The survey begins by evaluating the number of hours per workday individuals spend viewing a computer screen, with a follow-up on how long

respondents have been employed in computer-based jobs. This foundational data provides context for identifying trends associated with prolonged screen exposure and occupational history. Long-term exposure is often associated with cumulative strain symptoms, which can influence both ergonomic interventions and workplace policy.

#### 2. Work Habits and Display Maintenance

Participants were asked to describe their work habits, including how often they take breaks, adjust screen settings, and engage in preventive measures such as screen cleaning. Surprisingly, a significant number of users admitted to infrequent screen cleaning, which can contribute to reduced screen clarity and increased visual fatigue. Monitoring

these behaviors is crucial, as preventive habits can alleviate strain-related symptoms.

**3. Lighting Conditions and Visual Environment**

The quality and control of lighting in the work area emerged as a major focus. Respondents were asked to evaluate ambient lighting (natural or artificial), availability of window light control, the presence of task lighting, and the perceived brightness of the room. Inadequate lighting and uncontrolled window glare are known to significantly impact screen visibility and contribute to visual discomfort, headaches, and reduced productivity.

**4. Visual Display Parameters**

To understand screen readability and its impact on visual comfort, participants were surveyed on the color scheme of their display—specifically, letter color and background color. Additionally, data on screen viewing distance, monitor adjustability (e.g., height, tilt), presence of glare filters, and screen flicker detection were collected. Ergonomic research suggests that improper contrast, brightness, and viewing angles can lead to digital

eye strain (also known as Computer Vision Syndrome).

**5. Workspace Ergonomics**

The survey also assessed how the computer monitor is supported (e.g., on a stand, books, or adjustable arm), the alignment of the top of the display screen with the user's eye level, and the distance from the keyboard. These metrics directly relate to musculoskeletal health. Poor screen placement or keyboard distance can increase neck, shoulder, and wrist strain, reinforcing the need for proper workstation setup.

**6. Visual Discomfort and Corrective Aids**

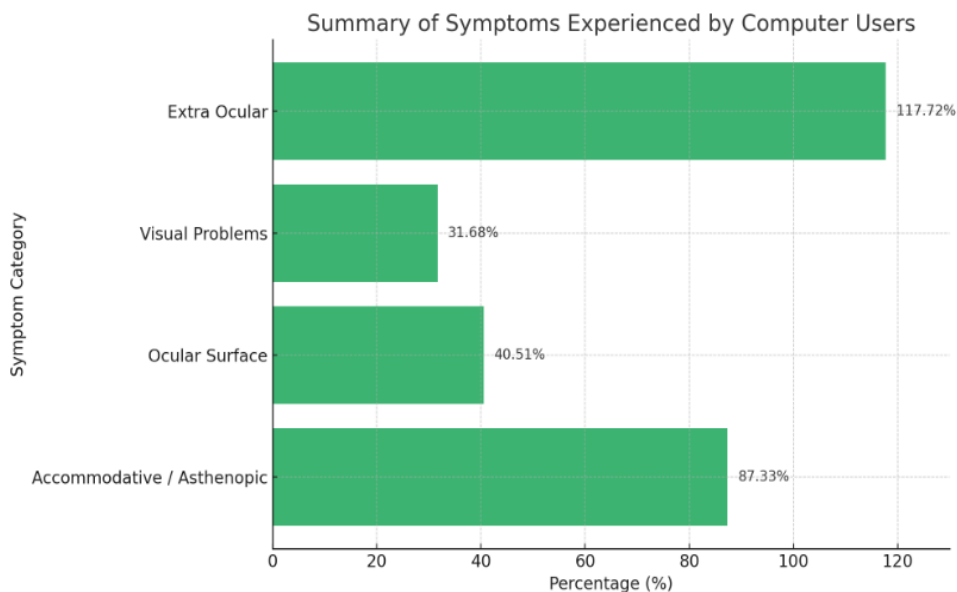
Crucially, respondents were asked about symptoms experienced during or after computer use, including dry eyes, blurred vision, headaches, or neck pain. Furthermore, the survey explored whether users wore glasses or contact lenses, and whether these aids were prescription-based, designed for screen use, or intended for general vision correction. This data supports findings that customized visual aids, such as computer-specific glasses, can reduce eye fatigue and improve comfort during prolonged screen usage.

**Table 1: Reported Physical Symptoms**

Symptoms experienced during or after computer usage.	Percentage
Extra Ocular	117.72%
Visual Problems	31.68%
Ocular Surface	40.51%
Accommodative / Asthenopic	87.33%

The most frequent symptoms include Extra Ocular (117.72%), visual problems (31.68%), ocular problems (40.51%), and accommodative symptoms

(87.33%). Several users experience complex multi-symptom issues highlighting potential for workstation ergonomics improvement.



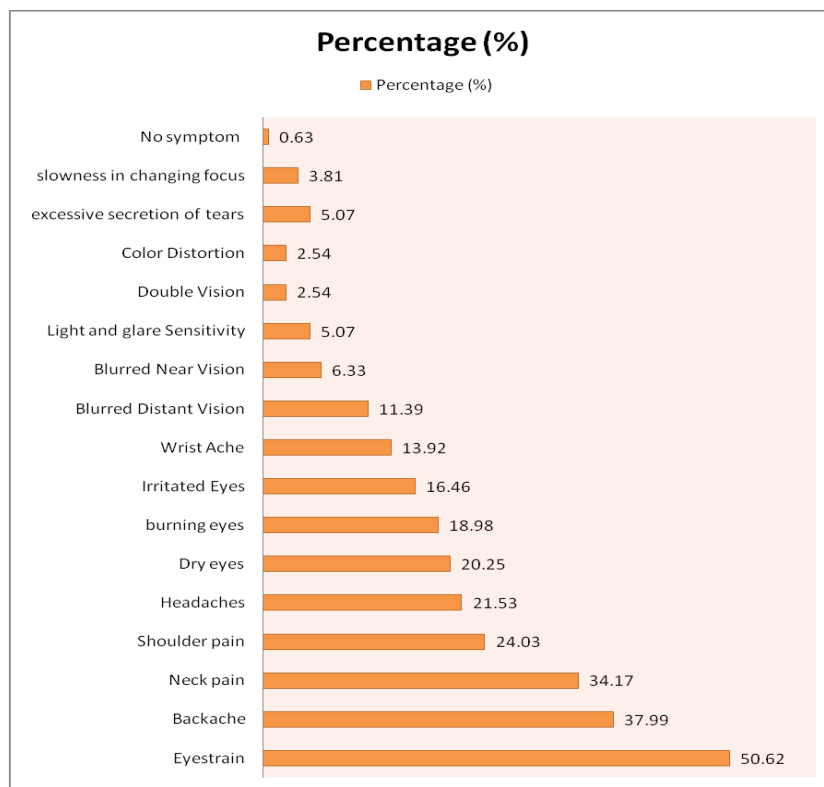
**Figure 1: Reported physical symptoms of the experienced computer users**

**CLINICAL FEATURES:**

- **Accommodative or asthenopic symptoms** - Dry eyes, Eye strain, Tired eyes, Sore eyes, irritation
- **Ocular surface related symptoms** - Watery eyes, burning eyes, Irritation, heaviness of the eyes, Contact lens problems
- **Visual problems**- Blurred vision, Poor focusing change, Double vision, Presbyopia, light and glare sensitivity, changes in colour perception, slowness in changing focus
- **Extra ocular symptoms** - headache, neck pain, back pain [upper back], shoulder pain

**Table 2: Ocular and extra-ocular Symptoms experienced by I.T. professionals**

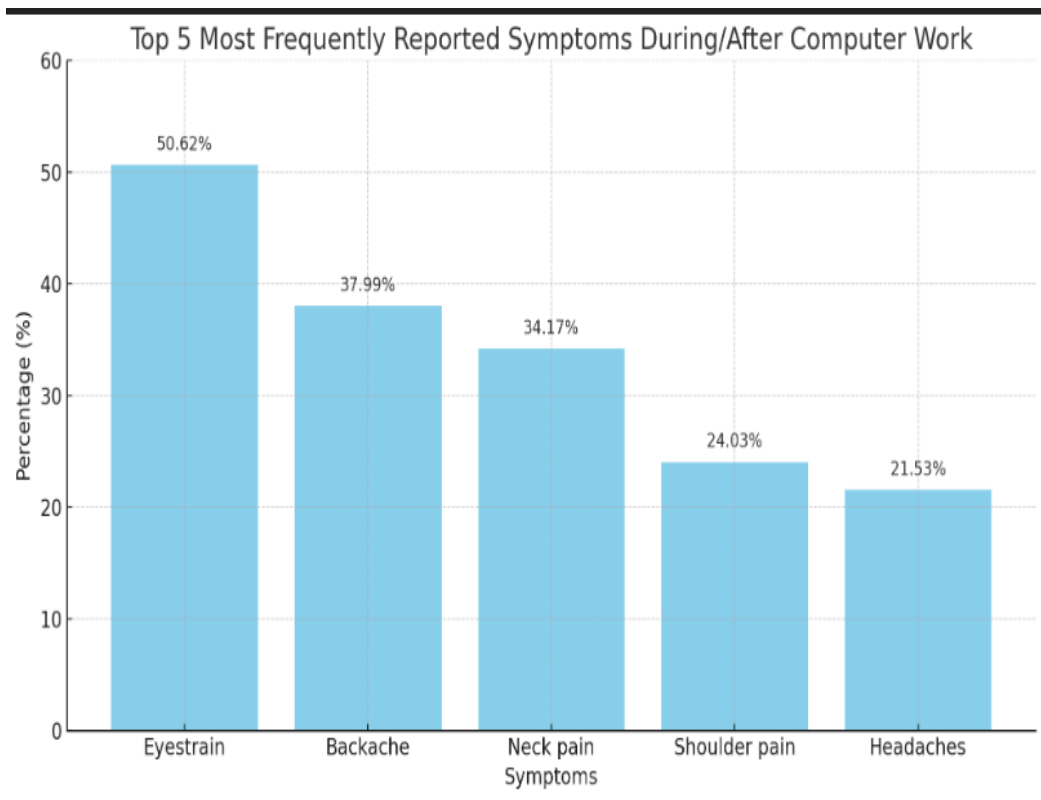
Symptom	Total Percentage (%)
Eyestrain	50.62
Backache	37.99
Neck pain	34.17
Shoulder pain	24.03
Headaches	21.53
Dry eyes	20.25
burning eyes	18.98
Irritated Eyes	16.46
Wrist Ache	13.92
Blurred Distant Vision	11.39
Blurred Near Vision	6.33
Light and glare Sensitivity	5.07
Double Vision	2.54
Color Distortion	2.54
excessive secretion of tears	5.07
slowness in changing focus	3.81
No symptom / Blank	0.63



**Figure 2: Ocular and Extra-Ocular Symptoms Experienced by I.T. Professionals**

**Table 3: Frequently Reported Symptoms by Usage of Computer Work**

<b>Top 5 Most Frequently Reported Symptoms</b>	<b>Percentage</b>
Eyestrain	50.62%
Backache	37.99%
Neck pain	34.17%
Shoulder pain	24.03%
Headaches	21.53%



**Figure 3: Frequently Reported Symptoms by Usage of Computer Work**

**Table 4: Viewing Distance from Keyboard**

<b>Distance in inches between users' eyes and keyboard.</b>	<b>Percentage</b>
Less than 10 inches	8.87
10 – 20 inches	37.99
20 – 30 inches	22.79
More than 30 inches	5.08
Not Applicable	2.54

Responses range from **3 inches to 40 inches**, but most common are **10-20 inches (37.99%)** and **20-30 inches (22.79%)**. This shows that ergonomic practices vary widely among users.

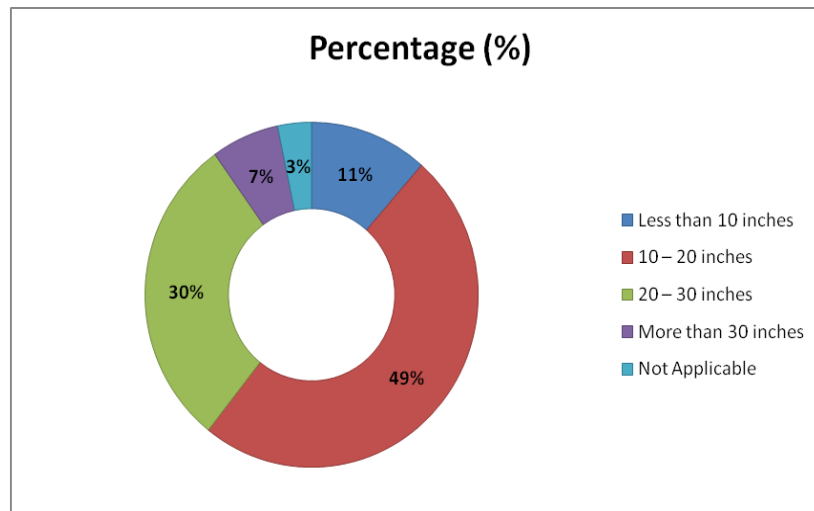


Figure 4: Viewing Distance from Keyboard to Usage of Computer Work

Table 5: Work Habit Types

Frequency and nature of breaks taken during computer work.	Percentage %
Constant—informal breaks, as required	34.18
Intermittent—periods of more than 1 hour	20.25
Intermittent—periods of less than 1 hour	17.1
Constant—no breaks, other than meals	14.55
Constant—regular breaks	13.92

The most common habit is “**Constant – informal breaks, as required**” (34.18%), followed by **intermittent breaks over 1 hour** (20.25%). Only

**14.55%** of users work constantly without breaks. This suggests a relatively balanced approach to screen-time among most users.

Table 6: Lighting Impact, Properties, and Their Effect on Computer Work

Lighting in the work area	Percentage
Fluorescent over head only	44.94
Fluorescent and incandescent over head	29.74
Fluorescent over head and incandescent direct	13.92
Incandescent over head only	11.39
Window light control:	Percentage
Curtains	64.58
Blinds	18.06
Vertical/Horizontal	17.36
Use of Desk Lamp/Task Light at work station	Percentage
No	51.88
Yes	48.12
How would you rate the brightness of the room?	Percentage
Medium	77.85
Very bright	20.25
Window light	Percentage

To the side	54.73
In front	24.32
Behind	20.95
<b>What color are the letters on your screen?</b>	<b>Percentage</b>
Black	77.54
White	7.25
Other than black or white	4.35
<b>What color is the background of your screen?</b>	<b>Percentage</b>
White	47.79
Blue	15.44
Black	10.29
<b>Can the monitor be raised / lowered?</b>	<b>Percentage</b>
Yes	54.43
No	27.85
<b>Do you notice the screen flicker?</b>	<b>Percentage</b>
No	56.33
Maybe	24.05
Yes	19.62
<b>Does the screen have a glare filter?</b>	<b>Percentage</b>
No	70.13
Yes	29.86
<b>Top of display screen eye level?</b>	<b>Percentage</b>
Equal to	64.55
Below	22.78
Above	12.66
<b>Is the monitor supported on....</b>	<b>Percentage</b>
Desk	67.09
Stand	26.58
CPU	6.33
<b>Do you wear glasses while working at the computer?</b>	<b>Percentage</b>
No	60.76
Yes	39.24
<b>If yes, are they ?</b>	<b>Percentage</b>
Single Vision	58.73
Progressive	31.75
<b>Reported frequency of cleaning display screens by computer users.</b>	<b>Percentage %</b>
Daily	23.33

occasionally	16.91
Rarely	59.76

### Lighting Conditions in the Work Area

The majority of workspaces rely on fluorescent overhead lighting alone, accounting for 44.94% of setups. A combination of fluorescent and incandescent overhead lighting follows at 29.74%, suggesting a preference for mixed lighting sources. Meanwhile, fluorescent overhead with direct incandescent lighting is used in 13.92% of cases, and incandescent overhead only is the least common at 11.39%. This indicates a strong leaning toward fluorescent lighting, likely due to its energy efficiency and brightness.

### Window Light Control Preferences

Curtains dominate as the preferred method for controlling window light, used by 64.58% of respondents. Blinds are used by 18.06%, while vertical or horizontal shades account for 17.36%. Curtains may be favored for their simplicity and aesthetic appeal, while blinds and shades offer more precise light control.

### Task Lighting Usage

When it comes to desk lamps or task lights, 51.88% of users do not use them, while 48.12% do. This near-even split suggests that task lighting is a personal preference, possibly influenced by ambient lighting quality or specific work requirements.

### Perceived Brightness of the Room

A significant 77.85% of users rate their room brightness as medium, while 20.25% consider it very bright. This implies that most workspaces maintain a balanced lighting environment, avoiding extremes that could cause eye strain or discomfort.

### Window Placement Relative to Workstation

54.73% of users have windows to the side of their workstation, which helps reduce glare. 24.32% have windows in front, and 20.95% have them behind. Side placement is ideal for natural light without direct interference with screen visibility.

### Screen Text and Background Colors

Most users (77.54%) view black text, which is standard for readability. White text is used by 7.25%, and other colors by 4.35%. Regarding background colors, white is the most common at 47.79%, followed by blue (15.44%) and black (10.29%). These choices reflect conventional design standards aimed at reducing eye fatigue.

### Monitor Adjustability and Ergonomics

54.43% of users can raise or lower their monitors, while 27.85% cannot. This adjustability is crucial

for ergonomic comfort. Additionally, 64.55% report that the top of their display screen is at eye level, which is ideal. 22.78% have it below, and 12.66% above, which may lead to neck strain over time.

### Monitor Support Type

Most monitors are supported directly on the desk (67.09%), followed by stands (26.58%) and CPUs (6.33%). Desk support is common but may lack height adjustability unless paired with ergonomic accessories.

### Use of Glasses While Working

60.76% of users do not wear glasses while working at the computer, whereas 39.24% do. Among those who wear glasses, 58.73% use single vision lenses, and 31.75% use progressive lenses, indicating a mix of vision correction needs.

### Screen Maintenance Habits

Screen cleaning habits show that 59.76% of users rarely clean their display screens, 16.91% do so occasionally, and only 23.33% clean them daily. This suggests a potential area for improvement in hygiene and screen clarity practices.

### Screen Flicker and Glare Filter Usage

56.33% of users do not notice screen flicker, while 24.05% are unsure, and 19.62% do notice it. Flicker can contribute to eye strain, so awareness is important. Regarding glare filters, 70.13% of screens do not have one, while 29.86% do, indicating that most users may be exposed to potential glare issues.

## RESULTS

The study revealed that computer professionals experienced a wide range of ocular and extra-ocular symptoms associated with prolonged screen exposure. The most commonly reported symptoms were **eyestrain (50.62%)**, **backache (37.99%)**, **neck pain (34.17%)**, **shoulder pain (24.03%)**, and **headaches (21.53%)**. Other ocular complaints included **dry eyes (20.25%)**, **burning eyes (18.98%)**, **irritated eyes (16.46%)**, and **blurred vision (distant – 11.39%, near – 6.33%)**. Less frequently reported symptoms were **double vision (2.54%)**, **color distortion (2.54%)**, and **slowness in changing focus (3.81%)**.

In terms of symptom domains, **accommodative/asthenopic problems were reported by 87.33%**, **extra-ocular complaints by 117.72%** (multiple overlapping responses), **ocular surface symptoms by 40.51%**, and **visual problems by 31.68%**.

Ergonomic assessment showed that the most common viewing distance from the keyboard was **10–20 inches (37.99%)**, followed by **20–30 inches (22.79%)**. Work habit patterns indicated that **34.18% took informal breaks as required**, while **14.55% worked constantly without breaks**. Regarding screen maintenance, **59.76% cleaned their screens rarely**, **16.91% occasionally**, and only **23.33% daily**.

Lighting conditions were variable: **fluorescent overhead lighting alone was reported by 44.94%**, with **77.85% rating brightness as medium**. **Curtains (64.58%)** were the most common form of window light control. Monitor ergonomics showed that **64.55% positioned the top of the display at eye level**, though **70.13% lacked glare filters** and **19.62% noticed screen flicker**. **54.43% of monitors could be adjusted in height**, while most were supported on desks (67.09%).

With respect to visual correction, **39.24% of users wore glasses**, predominantly **single-vision lenses (58.73%)**, followed by **progressive lenses (31.75%)** and **bifocals (9.52%)**.

## DISCUSSION

The findings indicate a high prevalence of both **ocular and musculoskeletal complaints**, suggesting that computer vision syndrome (CVS) is a multifactorial occupational hazard for IT professionals. The predominance of **eyestrain, dry eyes, blurred vision, and glare sensitivity** reflects accommodative and ocular surface stress caused by prolonged screen exposure. The musculoskeletal symptoms—especially backache, neck pain, and shoulder pain—highlight poor ergonomic practices and static postures during computer use.

The high percentage of **extra-ocular complaints (117.72%)** compared to ocular (40.51%) and accommodative (87.33%) indicates that musculoskeletal issues may contribute as much as visual fatigue to overall discomfort. Suboptimal workstation arrangements, particularly short viewing distances (10–20 inches), poor lighting conditions, and inadequate screen cleaning practices, appear to aggravate symptoms. The lack of glare filters and persistence of screen flicker also contribute to visual fatigue.

Work habits play an important role. Although a third of respondents took informal breaks, a considerable proportion worked for extended periods without adequate rest, thereby increasing susceptibility to CVS. Moreover, the finding that only about **23% clean their screens daily** reflects poor maintenance practices, which may exacerbate glare and reduce clarity.

The widespread use of **single-vision lenses** suggests that while refractive errors are corrected, they may not be optimized for intermediate distances typical of computer use. This may explain

persistent blurred vision and accommodative strain among spectacle wearers.

These findings are consistent with prior research, which links improper ergonomic setup, lack of rest breaks, and poor lighting to both ocular and musculoskeletal manifestations of CVS.

## CONCLUSION

The present study demonstrates that IT professionals frequently experience a **combination of ocular, accommodative, and musculoskeletal symptoms** attributable to prolonged computer use. The most common complaints were eyestrain, backache, neck and shoulder pain, headaches, and dry eyes, indicating both visual and ergonomic stress.

The results emphasize the need for a **multidimensional preventive approach**, including:

- **Workstation ergonomics** (appropriate viewing distance, screen positioning, glare filters, and adjustable monitors),
- **Visual hygiene measures** (regular breaks, screen cleaning, optimal lighting), and
- **Optical correction tailored for computer work** (such as computer-specific lenses).

Implementing these strategies can significantly reduce the burden of CVS and improve comfort, productivity, and overall occupational health among IT professionals.

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## CONFLICT OF INTEREST

The author declares no conflict of interest related to this study. The clinical cases were managed independently without any external influence or commercial sponsorship.

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## PATIENT CONSENT

Written and informed consent was obtained from all participants prior to inclusion in the study. Patients were made aware of the nature and objectives of the treatment and voluntarily consented to the use of anonymized data for research and publication purposes. Confidentiality

and privacy of the participants were maintained throughout the study.

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