

**Prevalence of Headache and Eye Disorders among IT Professionals**Amrita Chakravarty<sup>1</sup>, Shweta Sulabh<sup>2</sup>, Preethi G.<sup>3</sup>, Rajani Netravati Kaki<sup>4</sup>, Nagapriya N.G.<sup>5</sup>, Puneeth S.<sup>6</sup>, Varsha Natesh<sup>7</sup><sup>1</sup>Junior Resident, Department of Ophthalmology, the Oxford Medical College and Research Centre, Yadavanahalli, Bangalore, Karnataka, India.<sup>2</sup>Assistant Professor, Department of Ophthalmology, the Oxford Medical College and Research Centre, Yadavanahalli- Bangalore, Karnataka, India.<sup>3</sup>Assistant Professor, Department of Ophthalmology, Akash Institute of Medical Sciences, Devanhalli, Bengaluru Rural., Karnataka, India.<sup>4</sup>Consultant Ophthalmologist, District Hospital, Tumkur, Karnataka, India.<sup>5</sup>Junior Resident, Department of Ophthalmology, the Oxford Medical College and Research Centre, Yadavanahalli, Bangalore, Karnataka, India.<sup>6</sup>Junior Resident, Department of Ophthalmology, the Oxford Medical College and Research Centre,<sup>7</sup>Junior Resident Department of Ophthalmology, the Oxford Medical College and Research Centre, Yadavanahalli, Bangalore, Karnataka, India.

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**Abstract:****Background:** Computer usage have become part of our lives, being used by everyone ranging from children to IT professionals. Usage of digital screens have made our lives easier but has increased diseases associated with long hours of screen usage. Problems related to the eyes include frequent headaches, refractive errors, double or blurry vision, dry eyes, focusing difficulties, eye irritation, excessive tearing, eye pain and eye fatigue which have been recently grouped under, 'Computer Vision Syndrome' (CVS). Our study aims to find these diseases among people who have extended hours of screen usage.**Methods:** The present cross-sectional study was conducted on 150 IT professionals working in Bangalore, consent being taken. A structured questionnaire was prepared to assess the various aspects of headache among IT professionals such as duration, frequency and severity, as well as the incidence of ocular pain, refractory errors and spectacle usage among the same. The main criterion for selection of subjects is daily computer usage.

The questionnaire was distributed among consenting subjects within the work premises of various companies of the Information Technology Industry in Bangalore. Duration of 5 minutes was given per subject to fill out the questionnaire. Their identities are kept undisclosed in order to maintain confidentiality.

**Results:** Out of the 150 IT Professionals we conducted the study on, 93 of them suffer from headache i.e. with Prevalence Rate of 62.4% and 65 of them had Eye Pain i.e. with Prevalence Rate of 56.4%.

There were a total of 114 Males and 36 Females.

**Conclusion:** In conclusion, it was found that the prevalence of headache amongst IT professionals was quite high and increased with number of hours of computer usage in a day. The results were found to be similar in males as well as females. Ocular pain was found to be a less common complaint than headache.**Keywords:** Refractive Errors, Computer Vision Syndrome, Eye Disorders, Ocular Pain.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Nearly 60 million people suffer from CVS globally, resulting in reduced productivity at work and reduced quality of life of the computer worker [1]. "Computer Vision Syndrome" (CVS), is defined by the American Optometric Association as a complex of eye and vision problems related to the activities which stress the near vision and which are experienced in relation to or during the use of computers [1]. Computers have become an indispensable part of our lives today, being used by

everyone ranging from children to adult [2]. They have made our lives easier in every aspect. There are approximately 6 computers per 1000 population, with an installation of 18 million personal computers, and their number is increasing continuously.

The IT sector in India is growing at a rapid rate, currently employing around 2,23,614 people, with Bangalore being the IT capital of India and the

indispensability of computers in this field is obvious. There is a very high 1 year prevalence of migraine in south India (the mean global prevalence is estimated at 14.7 %) [3]

Visual symptoms include blurred vision, visual fatigue or discomfort, and diplopia. [4-7] Ocular symptoms include dry eye disease, redness, eye strain, and irritation. [1,8,9] Extraocular symptoms include headache and shoulder, neck, and back pain. [3,4,10,14]

Studies in Bangalore show that 66% of software professionals in Bangalore suffer from headaches, and 75% suffer from CVS. Estimates of the prevalence of eye problems associated with VDTs vary enormously, depending on the sample tested, research methods employed and study instrument used. [4,5] In a review on CVS, Thomson indicated that up to 90 % of computer users may experience symptoms related to CVS after prolonged computer usage

The National Institute of Occupational Safety and Health (NIOSH) reports that nearly 88% of all computer professionals will develop CVS at some time in their lives.

According to the American Optometric Association (AOA), at least 10 million cases of computer-related eye strain were reported every year.

The unique characteristics and high visual demands of computer work make individuals susceptible to the development of eye and vision-related symptoms.

Viewing a computer is different than reading a printed page. Often, the letters on the computer are not as precise or sharply defined, the level of contrast of the letters to the background is reduced, and the presence of glare and reflections on the screen may make viewing difficult, causing excessive strain, leading to headache.

Studies show that reading dark print on an extremely bright background can lead to spasms of the muscles at the temples, which causes stress headaches.

Viewing distances and angles used for this type of work often different from those used for other reading or writing tasks. As a result, the eye focusing and eye movement requirements for digital screen viewing can place additional demands on the visual system.

Uncorrected vision conditions, poor computer design, improper sitting position, continuous work without breaks and bad workplace ergonomics can

contribute to the development of visual symptoms, ultimately causing headaches due to eye strain.

Work that is visually and physically fatiguing may result in lowered productivity, increased error rate and reduced job satisfaction. Therefore, steps should be taken to reduce the potential for development of stress and related ocular and physical discomfort in the workplace.

#### Aim

The aim of the study is

- To determine the prevalence of headache among IT professionals.
- To determine the prevalence of ocular pain and refractory errors among IT professionals

#### Materials and Methods

The present cross-sectional study was conducted on 150 IT professionals and inclusion criteria as follows

#### Inclusion Criteria

- Professionals from the Information Technology Industry
- Subjects of both sexes
- Aged between 20 and 55 years
- Minimum work experience of one year in the IT field
- Minimum of 4-5 hours of computer work per day
- Minimum of 5 working days a week

#### Methodology

A structured questionnaire was prepared to assess the various aspects of headache among IT professionals such as duration, frequency and severity, as well as the incidence of ocular pain, refractory errors and spectacle usage among the same. The main criterion for selection of subjects is daily computer usage.

The questionnaire was distributed among consenting subjects within the work premises of various companies of the Information Technology Industry in Bangalore. Duration of 5 minutes was given per subject to fill out the questionnaire. Their identities are kept undisclosed in order to maintain confidentiality.

**Statistical Analysis:** The data thus obtained was subjected to statistical analysis. An excel sheet was used for the purpose to compare the various domains under study. The data was tabulated by chi square method and results were generated.

#### Questionnaire

#### Prevalence of headache and eye disorders in IT professionals

1. Age:                      2. Sex: Male  Female

3. Designation: \_\_\_\_\_

4. Number of years working as an IT professional:

1-5 years

5-10 years

More than 10 years

5. Number of days of work in a week:

5

6

Other: (please specify)

6. Number of hours of work in a day:

4-5 hours

6-7 hours

8-9 hours

More than 9 hours

7. Number of hours of computer usage:

6-8 hours

8-10 hours

10-12 hours

More than 12 hours

8. Do you take a break from the computer during work?

Yes

No

If YES, how often?

1-2 times

2-3 times

3-4 times

More than 4 times

9. Number of hours of sleep:

Less than 6 hours

6-8 hours

More than 8 hours

10. Do you suffer from headaches? (If YES, answer the next 9 questions)

Yes

No

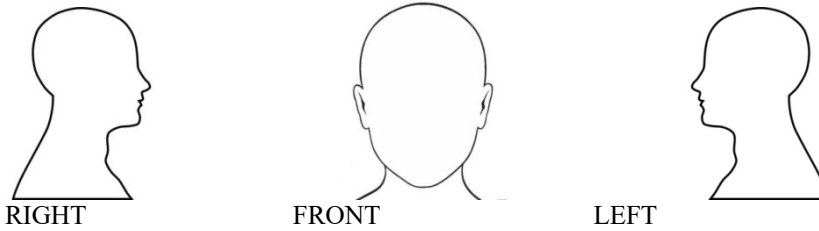
11. How often do you get headaches?

- Once a week
- 2-3 times a week
- More than 3 times a week

12. Duration of headache:

- 1-3 hours
- 4-6 hours
- More than 6 hours

13. Exact site of headache: (please shade in the pictures below)



14. How severe is the headache?

- Mild
- Moderate
- Severe

15. When does the headache increase? (Please specify)

16. When does it decrease? (Please specify)

17. Do you take any medications for headache?

➤ If Yes, which ones? (Please specify dose and frequency)

18. Do you have any other associated symptoms? (Please specify)

19. Is there anything specific which causes headache?

20. Do you have a history of migraine?

- Yes
  - No
- If yes, are you on treatment?

21. Do you get eye pain?

- Yes
- No

22. Do you have any vision problems?

- Yes
- No

23. Do you wear glasses? (If yes, please answer the next 4 questions.)

- Yes
- No

24. What is the power of your glasses? Has the power changed?

Power: \_\_\_\_\_ Yes  No

25. Is it for near vision or far vision?

- Near vision
- Far vision

26. How long have you been wearing them?

- Less than 1 year
- 1-5 years
- More than 5 years

27. Do you wear glasses all day?

- All the time
- Only while reading.

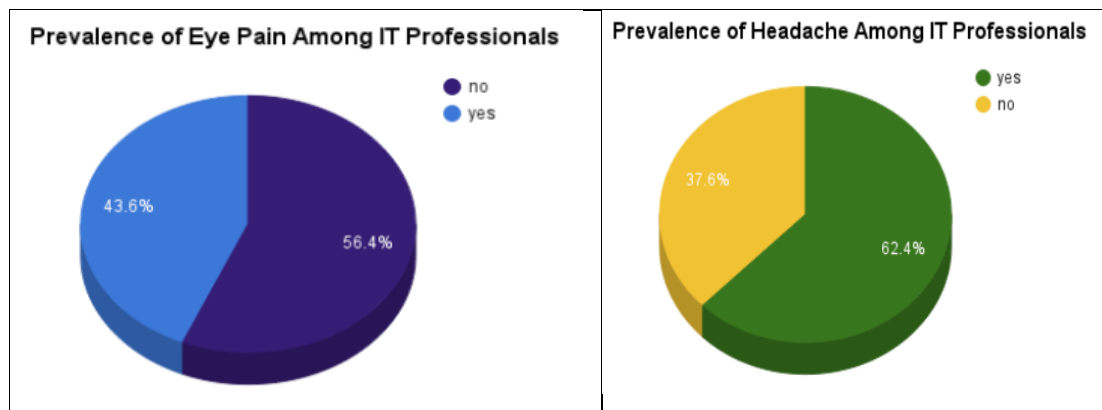
28. Do you suffer from any other problems? (Please specify)

29. Does anyone in your family have similar complaints?

30. COMMENTS (if any):

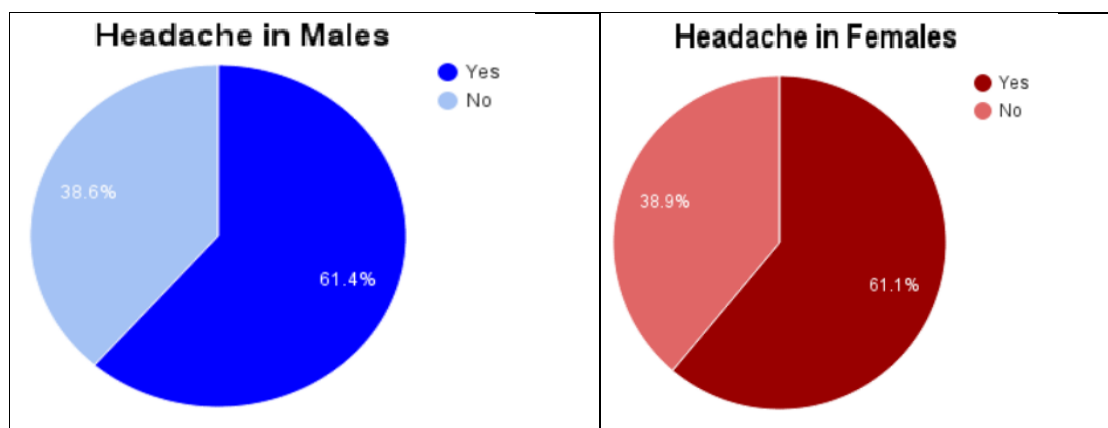
Thank you for your time!

**Results**



**Graph 1: Prevalence of eye pain and Headache among IT Professionals**

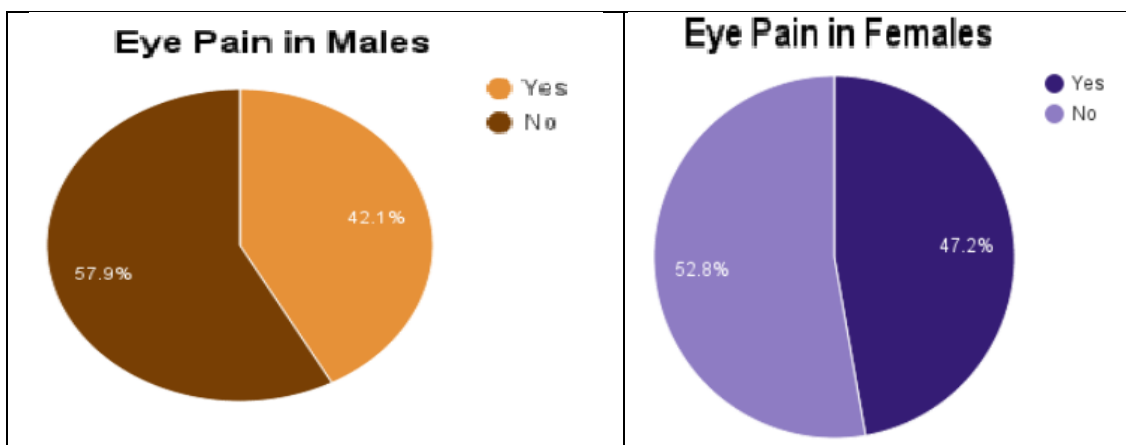
Out of the 150 IT Professionals we conducted the study on, 93 of them suffer from headache i.e. with Prevalence Rate of 62.4% and 65 of them had Eye Pain i.e. with Prevalence Rate of 56.4%. There were a total of 114 Males and 36 Females.



**Graph 2: Headache in males and females**

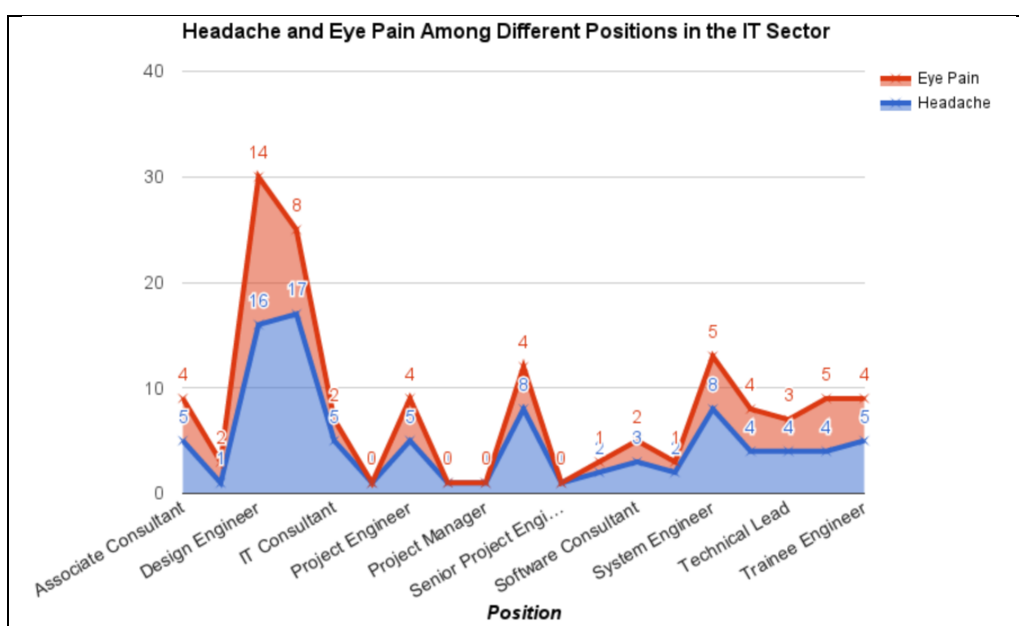
Out of 114 males 71 of them suffer from headache i.e. Prevalence Rate of 61.4% in Males and 22 out of 36 females suffer from headache i.e. Prevalence Rate of 61.1% in females.

Hence there was no significant difference in the Prevalence Rates of Males and Females.



Graph 3: Eye pain in males and Females

Out of 114 males 48 of them suffer from Eye Pain i.e. Prevalence Rate of 42.1% in Males. And 17 out of 36 females suffer from Eye Pain i.e. Prevalence Rate of 47.2%.



Graph 4

Headache

Table 1: Headache

Hours of Work	Number Affected with Headache	% Affected with Headache
4-5 hours	0	0%
6-7 hours	10(18)	55.50%
8-9 hours	61(103)	59.2%
>9 hours	21(29)	72.40%

IT Professionals working for more than 9 hours have an increased tendency to suffer from headache when compared to those working for less than 8 hours.

Hours of Computer Usage in a Day	Number Affected with Headache	% Affected with Headache
6-8 hours	37(67)	55.22%
8-10 hours	35(54)	64.8%
10-12 hours	16(23)	69.50%
>12 hours	5(6)	83.30%

The above table shows that there is an increase in the prevalence of headache in IT Professionals with increase in computer usage. IT Professionals using

computer for more than 12 hours a day have a higher Prevalence Rate of 83.3% suffering from headache when compared to IT Professionals using

computer for 10-12 hours with Prevalence rate of 69.5% and with Prevalence Rate of 64.8% and 55.2% in IT Professionals using the computer for 8-10 hours and 6-8 hours respectively.

Out of the 93 IT professionals with headache, 47.8% of them complain of headache once a week and 43.5% of them complain of headache 2 to 3 times a week.

The pain is moderate in intensity in 48.9% of them as compared to 42.4% mild and 8.7% severe intensity. It lasts for about 1 to 3 hours in 62.6% of the individuals.

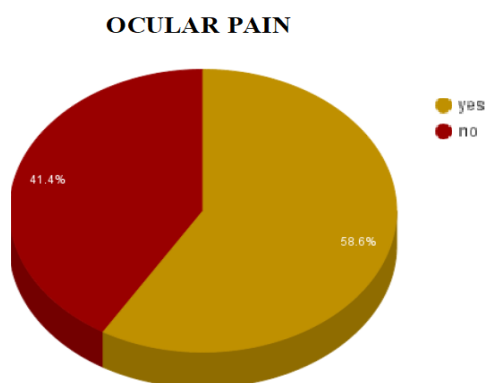
38.5% of IT Professionals with Headache complain of increase in pain after long working hours in front of the computer.

Other aggravating factors include stress, cold temperature, lack of food, lack of sleep and exposure to light.

It was seen that 29.3% of those affected took medications such as Dolo (650mg), Acelcofenac, Crocin, Naxdom, Ibuprofen and Dart.

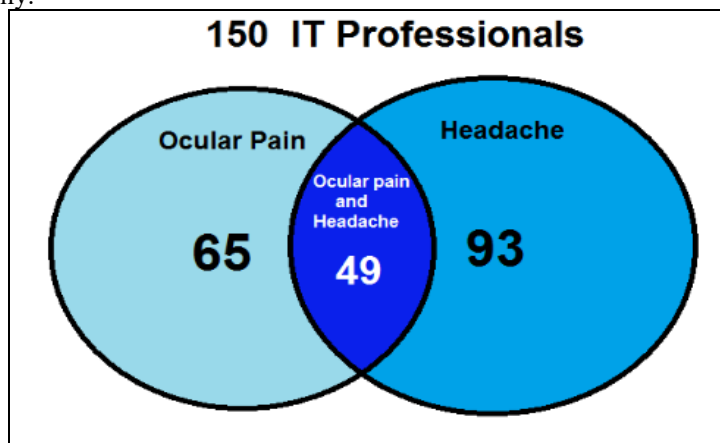
**Ocular Pain**

Out of the 150 IT Professionals 65 of them suffer from Ocular Pain i.e. Prevalence Rate of 56.4%. 38.9% of the IT Professionals wore spectacles, out of which 93.1% where due to short sightedness and 58.6% of them had a change in power in the past one year.



**Graph 5: Ocular Pain**

Out of 150 IT professionals, 93 complained of headache and 65 complained of eye pain. Of these, 49 of them complained of both Headache and Ocular Pain i.e. **Prevalence Rate of 32.6%**. And only 13.6% give similar complaints in the family.



**Graph 6: 150 IT Professionals**

**Discussion**

Computer Vision Syndrome” (CVS), is defined by the American Optometric Association as a complex of eye and vision problems related to the activities which stress the near vision and which are experienced in relation to or during the use of computers[1]. The massive growth of digital devices has become an integral part of daily life, and millions of individuals of all ages are at risk of CVS. [16-18] In developed nations, engagement with digital

devices has increased substantially in recent years across all age groups. [19-22] Moreover, digital device use has increased in developing countries, resulting in a high burden of CVS due to low accessibility, low utilization of personal protective equipment, and limited break time while using electronic devices. CVS is a major public health problem leading to occupational hazard, an increased error rate, impaired visual abilities, reduced productivity, and low job satisfaction. [23,24]

A review of the literature showed that factors associated with CVS can be classified as personal factors, which include poor sitting position, inappropriate eye-to-screen distance, insufficient working procedures, improper viewing angle and distances, age, medical diseases, and long duration of computer usage. The environment and computer factors such as improper workstations, poor lighting, contrast, and resolution rooms, slow refresh rate, glare of the display, excessive screen brightness, and imbalance of light between the computer screen and surrounding working room. [10, 25-28]

The massive growth of digital devices has become an integral part of daily life, and millions of individuals of all ages are at risk of CVS. [16-18] In developed nations, engagement with digital devices has increased substantially in recent years across all age groups. [19-22] Moreover, digital device use has increased in developing countries, resulting in a high burden of CVS due to low accessibility, low utilization of personal protective equipment, and limited break time while using electronic devices. CVS is a major public health problem leading to occupational hazard, an increased error rate, impaired visual abilities, reduced productivity, and low job satisfaction. [23,24] Modern digital technology markedly influences the daily activities and lifestyles of people. [4,7] CVS has an effect on reduced productivity and visual and musculoskeletal impairment and a negative impact on cardiac rhythms and sleep. patterns. [4,7,13,29,30] Although CVS is becoming a major public health problem, less emphasis is given, particularly in developing countries. There are primary studies on different continents; however, there are inconsistent findings in prevalence among the primary studies. [30,31,32] Therefore, this systematic review aimed to estimate the pooled prevalence of computer vision syndrome.

### Conclusion

The aim of this paper was to report the prevalence of headache and eye pain amongst IT professionals and was found that the prevalence of headache was quite high and increased with number of hours of computer usage in a day. The results were found to be similar in males as well as females. Ocular pain was found to be a less common complaint than headache.

However, on chi square analysis, it was seen there was no significant relationship between hours of computer usage and prevalence of headache. This could be due to a small sample size and study on a larger group may be helpful in determining the risk factors.

Computer Vision Syndrome needs to be emphasized as a concern in occupational health and appropriate ergonomics should be applied to decrease the health problems related to morbidity. There is a need to increase awareness among IT professionals

and corrective measures need to be implemented to reduce the impact of computer related headache and ocular pain.

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