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"COMPARISON OF DRY EYE SYNDROME IN CVS PATIENTS BASED ON SUBJECTIVE AND CLINICAL ASSESSMENT"

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ABSTRACT

Dry eye disease is a chronic condition of the corneal surface marked by persistent symptoms of irritation or burning that can cause inflammatory damage to the cornea and conjunctiva if untreated. Common risk factors for this syndrome include advancing age, female sex, low humidity environments, systemic medications, and autoimmune disorders. Treatments to relieve symptoms include tear replacement, humidification, improved nutrition, and anti-inflammatory ocular agents. Home healthcare nurses can identify signs and symptoms of dry eye syndrome and initiate strategies that range from warm compresses to physician referrals for more aggressive treatment. Consistent management of this condition improves quality of life and minimizes damage to the ocular surface.

KEYWORDS

TBUT- tear film breakup time CCT-

Central corneal thickness CVS-Computer

Vision Syndrome DED-Dry Eye disease

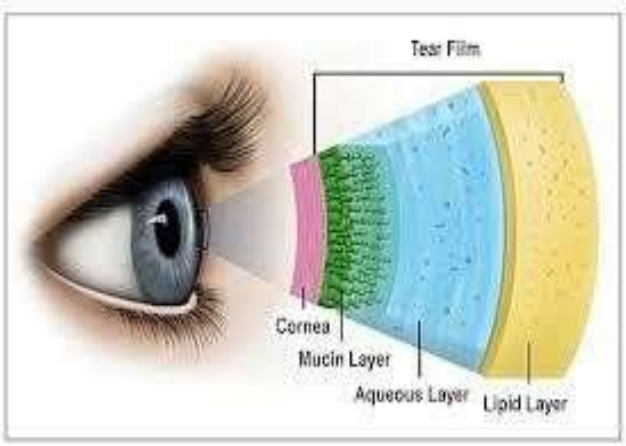
DES-Dry Eye Syndome

INTRODUCTION

Computer vision syndrome (CVS) is a combination of eye and vision problem associated with the use of digital devices . While the dry eye may be the primary cause of CVS since it significantly reduces the blink rate and increases corneal exposure. Digital eye strain (DES), also called computer vision syndrome (CVS), is a major global health concern of the 21st century. It affects nearly 70–75% of all electronic device (ED) users, with a worldwide estimation of 60 million people and millions of new cases each year. According to the American Optometric Association (AOA), DES is a set of visual and ocular discomforts that occur after extended exposure to an ED screen. The risk factors of DES include poor brightness and luminosity, glares, inappropriate screen distances, improper ergonomics and postures, non-corrected refractive errors, and environmental factors. Excessive use of ED is the leading risk of exposure to DED. The blinking rates are 22 blinks/min while relaxing, 10 blinks/min while reading on a paper, and 7 blinks/min while viewing on a digital screen. This causes poor dispersion of tear film, which leads to inadequate lipid layer, unstimulated meibomian glands, and ocular surface evaporation; thus, eyestrain symptoms such as eye dryness, burning, itching, and grittiness. DED is among the most common reasons for ophthalmology visits. As reported by the Tear Film Ocular Surface Society (TFOS) Dry Eye Workshop (DEWS) II, DED is the frequently complex disorder of tear film and ocular surface (cornea and conjunctiva) defined by alteration of lacrimal dynamics and hyperosmolarity.

DED significantly affects the quality of life of affected people and reduces their productivity In the United States, the total loss of productivity due to DED was estimated to be $55,4 billion per year. DES and DED symptoms are both associated with screen exposure time and may co-occur;

thus, some DED symptoms can be attributed to DES and vice versa. For instance, in the CVS-Q, there are also questions about dry eye symptoms, such as burning, itching, feeling of a foreign body, tearing, excessive blinking, eye redness, eye pain, heavy eyelids, and dryness. Most previous studies have separately investigated DES and DED correlation between DES and DED, the present study aimed to evaluate this correlation and determine the prevalence of DED symptoms according to the severity of DES. In addition, this study provides recommendations from our experts regarding safer practices while extensively using ED.



People expand extended hours using electronics device due to digitalisation . Digital eye strain and dry eye disease both are associated with prolonged screen exposure time.

This study aimed to evaluate the corelation dry eye syndrome and dry eyed diseased symptoms and determine the prevalence of dry eye diseased according to the severity of digital eye strain.

TOOLS REQUIRED

- INSTRUMENT – Snellen chart , Fluorescent strip , Schirmer's strip , slit lamp
- PERFORMA – SPEED Questionnaire and case sheet
- TYPE OF STUDY – Analytical
- PLACE OF STUDY – Integral university lucknow
- APPROX SAMPLE SIZE – 30 case

METHODOLOGY

The data for dry eye disease subjects who were underlying CVS symptoms were many in the ophthalmology department between march to May. We gathered 30 patients (max sample size) , out of which 12 were male and 18 were female in between the age group of 18-25. The subjects were chosen among the optometry department and staff at Integral University.

A written informed consent will be taken from every subject and subject passing the selection criteria for the study undergo ophthalmic examination according to the preset case recording format.

- All the subjects will go through subjective and clinical assessment.
- A self-administrated questionnaire was used to collect sociodemographic data, symptoms of CVS , details of electronic device uses, presence of pain in and around the eye,headache , blurring of vision, dry and irritated eyes, etc.
- All the subjects were gone the clinical assessment in which TBUT, schirmer's test, flourescin dye test, visual acuity as well as blinking rate was also measured.
- Patients were examine in out patient department where objective assessment could be easily done.

- Snellen's chart were used in this study for recording visual acqity of patients after that the value of snellen's chart was converted into LOGMAR value.
- Schirmer's test I was used to evaluate aqueous tear production and was carried out as follows:
    1. Watman paper strip were applied into the inferior – temporal aspect of conjectival sac of the eyes.
    2. The room was dimly lit, and the subjects were asked to close there eyes.
    3. The wetted length, in millimeters, is measured after 5 min.
- The TBUT test was used to assess the evaporating dry eyes.
- To measure TBUT fluorescein was installed into the subject's tear film and was asked not to blink while the tear film was observed under the beam of cobalt blue light. The TBUT was recorded as the number of seconds that elapse between the last blink and the appearance of first dry spot on the tear film.

- The measurement of CCT was done through non contact tonometer which was available in ophthalmology department.

• All the measurements will be made by single observer to reduce investigator error.

FIG 1: Performing Schirmer's test

FIG 2: Explaining Questionnaire

FIG 3:Taking the consent of the subject

FIG 4: CCT Examination

FIG 5: TBUT examination on Keratometer

FIG 6: Performing Visual Acuity test

INCLUSION CRITERIA

• Adults between the age group of 18-35 years diagnosed with asthenopic symptoms

• Adults between the age group of 18-35 years who are asymptomatic.

• Adults who are having screen time more than 5 hours a day.

EXCLUSION CRITERIA

• Adults with history of trauma

. • Adults with combined surgeries simultaneously

. • Unwilling adults.

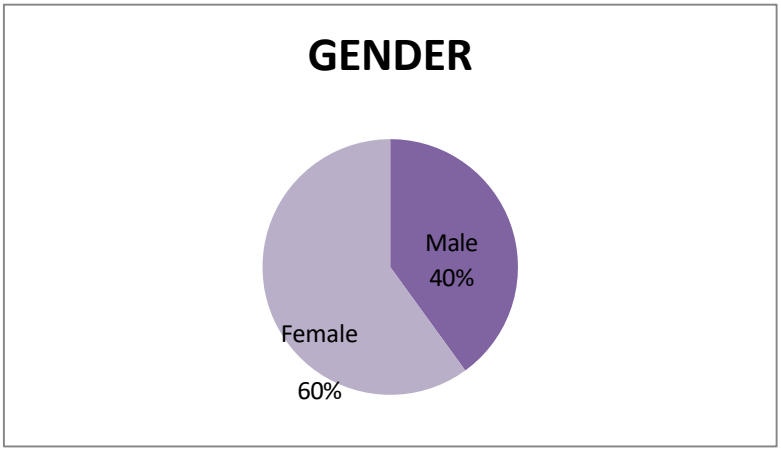
• Adult with mental issues

. • Adults on any ocular medications.

• Adults with pathological/systemic disease.

RESULT AND ANALYSIS

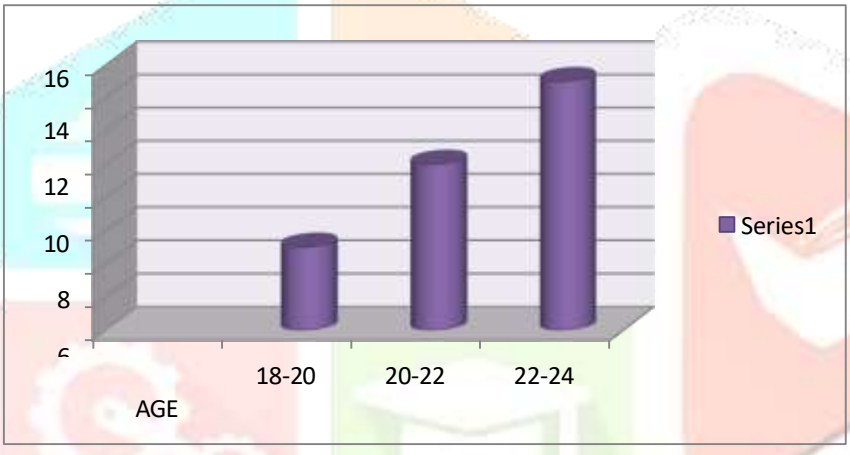
The total number of dry eye disease patients having CVS symptoms was many in the department of optometry. After all the inclusion and exclusion criteria the total number of cases for analysis was 30 among those 12 were male and 18 were female as shown in Figure 1.



GENDER	
Male	12
Female	18

FIGURE 1

The subjects taken for the analysis were into the age group of 18 to 25 as shown in figure 2.



AGE	
18-20	5
20-22	10
22-24	15

FIGURE 2

Among all the 30 subjects taken there was a significant difference seen in CCT between the age of 15-25 as shown in figure 3.

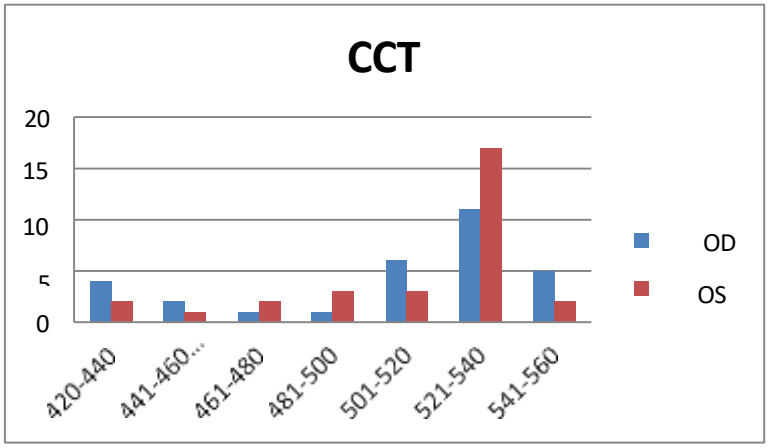


FIGURE 3

The visual acuity of both the eyes in all the 30 subjects was recorded by using snellen's chart and was converted into the LOGMARG value as shown in figure 4.

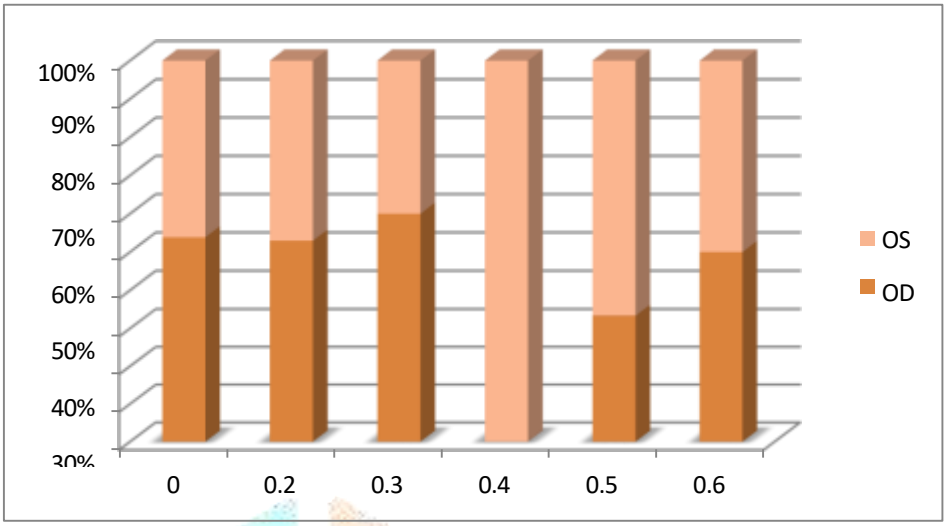


FIGURE 4[VISUAL ACUITY]

The TBUT test of all 30 subjects was recorded by using fluorescein dye under cobalt blue light by using slit lamp were having thr following result as shown in figure 5.

TBUT		
	OD	OS
10--20sec	8	9
21-30sec	14	13
31-40sec	8	8

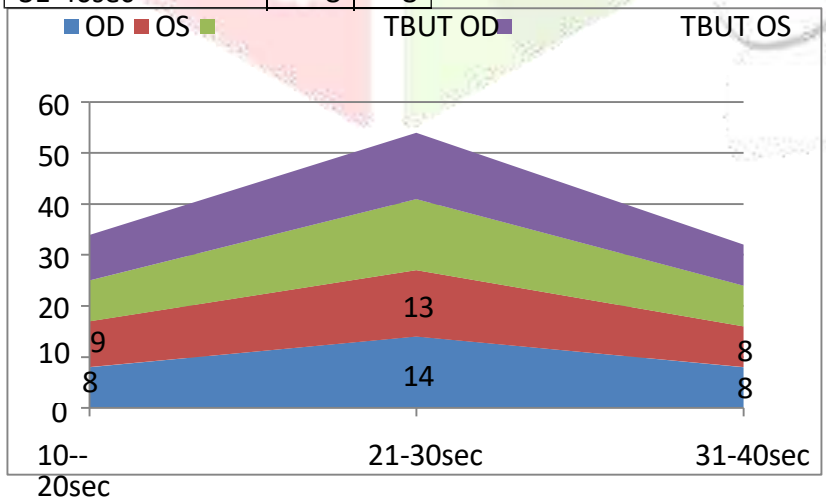


FIGURE 5

According to the speed score questionnaire for dry eye disease the following data was recorded among the 30 subjects taken for case study and the result are shown in figure 6.

Speed score	
0.2-0.4	8
0.4-0.6	16
0.6-0.8	6

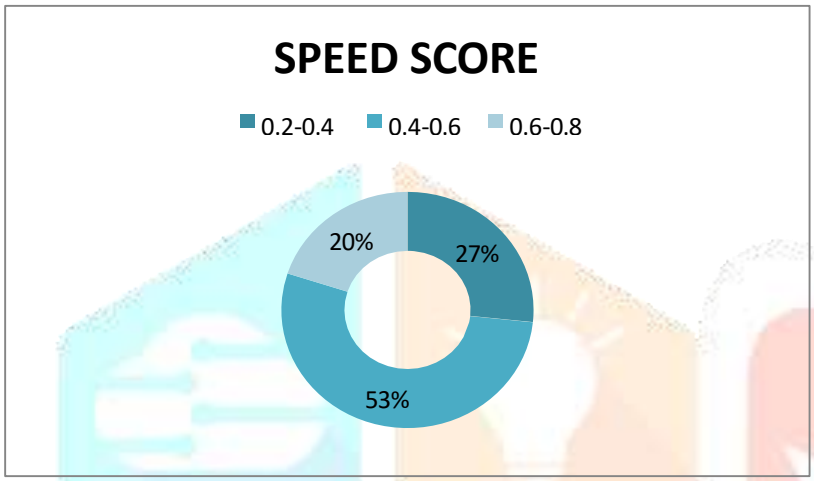
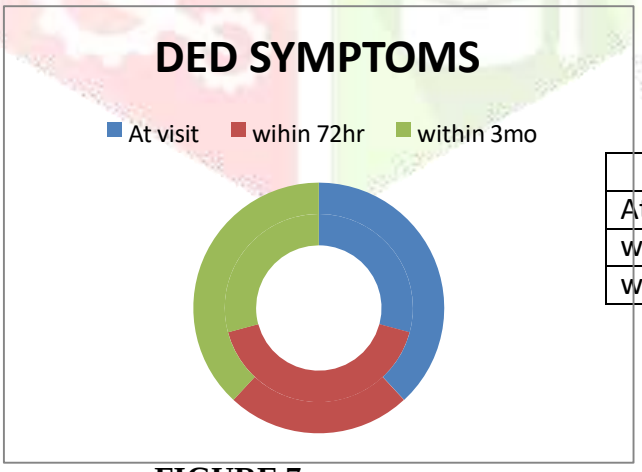


FIGURE 6

The subjects selected after all the inclusion and exclusion criteria were found with the following DED symptoms at different time interval shown in figure 7.



DED Symptoms

	YES	NO
At visit	14	16
wihin 72hr	20	10
within 3mo	14	16

FIGURE 7

Among all the 30 subjects we found variable Schirmer's reading as shown in figure 8.

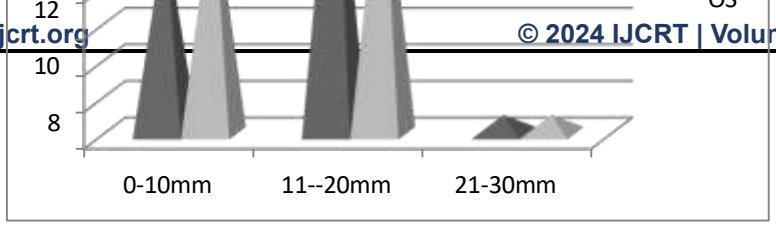


FIGURE 8

SCHIRMER'S TEST

	OD	OS
0-10mm	11	13
11--20mm	19	16
21-30mm	1	1

DISCUSSION

This article reports on symptoms of a modern disease that is dry eye syndrome associated with CVS that is resulting from greater computer use nowadays.

This study was done in the campus of integral hospital to examine the effects of prolong computer use among students and staff members, who were noted from extensive electronics device use.

Headache was one of the symptoms most frequently experienced by respondents, reported by 66.5% of subjects. A similar study in India found 82.1% of the study population reported suffering from headaches and Sen and Richardson reported a 61% prevalence of headaches among computer users in Tokyo. Another similar study conducted in Egypt found that 26% of medical students complained of headaches, and a study in Malaysia found that headache, with a prevalence of 19.7%, was the most reported symptom among university students. These reports suggest that headaches— in the form of one-sided headache, vision-related or cluster headache, or tension headaches is a common symptom due to frequent computer use. Another common symptom observed in this study was musculoskeletal pain in the shoulder, upper limb, and neck, reported by 82.2% of the study population.

This study also reports the extensive prevalence of other ocular symptoms like dry eyes and burning eye sensation. One of the most commonly reported “severe” symptoms in this study was dry eye at 5.6%, with a prevalence of 51.5% (mild, moderate, and severe) which is higher than 28% as reported by Iqbal et al. where dry eye was the most prevalent symptom.

Several studies have shown blurred vision to be associated with computer use 44.6% of this study’s respondents reported this symptom in mild, moderate, or severe form. Eye redness was the least experienced “severe” symptom in this study by 1.4%; similarly, it was one of the least reported symptoms among students in Malaysia by 2.4%.

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