



"A STUDY ON PREVALENCE OF DRY EYE SYMPTOMS AND ITS RELATION TO DIGITAL SCREEN TIME EXPOSURE IN PATIENTS ATTENDING OPHTHALMOLOGY OPD ."

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ABSTRACT

Aim: Dry eye syndrome is a chronic disorder of the ocular surface that can substantially affect the quality of life of an individual. An increased global dependence on digital screen has led to a rise in associated visual complaints, including eye strain, ocular dryness, burning, blurred vision, and irritation, to name a few. We have conducted this study to report the prevalence of dry eye symptoms and its relation to digital screen time exposure in patients attending ophthalmology OPD at our tertiary care centre. **Methods:** It was prospective study conducted in the tertiary health care centre, over a period of 2 years. We studied 110 patients of various age group 18 - >60 years with dry eye symptoms. A detailed history, vision, ocular examination and various dry eye tests were done and they were called on follow ups at 2 and 4 weeks. **Results-** Maximum number of patients came with complaint of watering(92.7%) followed by redness (90%), Foreign Body Sensation (72.7%), itching (28.2%) and Blurring Of Vision (27.3%). No significant association between screen time and symptoms. Females(62.26%) were found to be more involved than males (56.14%). Percentage of patients having dry eye disease in the age group 18-40 years was maximum (66.4%) followed by 41-60 years (31.8%), >60 years (1.8%). **Conclusion-** In our study, we found out maximum age group with dry eye disease was 18-40 years of age, which is in contrast to other studies showing more in older age group. This can be attributed to online mode of schooling, frequent gaming and work from home scenario during covid 19 pandemic.

KEYWORDS : Dry Eye Disease, Screen Time, Covid 19 Pandemic.

INTRODUCTION:

Dry eye syndrome is a chronic disorder of the ocular surface that can substantially affect the quality of life of an individual^[1]. The International Dry Eye Workshop (DEWS) in 2007 defined dry eye as a multi-factorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear-film instability, with potential damage to the ocular surface. The syndrome is accompanied by increased osmolarity of tear film and inflammation of ocular surface. The signs and symptoms include a stinging, burning or scratchy sensation, the feeling that there is some foreign substance in the eyes, the presence of stringy mucus discharge, increased eye irritation from smoke or wind, ocular fatigue after short periods of reading, watching television or working on computer, and a blurring of vision that improves with blinking.

METHODS AND MATERIALS:

This prospective observational hospital-based time bound study was conducted. After approval from the Institutional Ethics Committee, total 110 patients of various age group 18 - >60 years and with digital exposure 1- 9 hours, all adults giving consent for the study were included in the study. Any previous diagnosis of dry eye disease, BCVA less than 6/60, any other ocular pathology, contact lens wearer, past history of eye surgery in 6 months, individuals not giving consent for the study were all excluded from the study. A detailed history was obtained regarding the symptoms of itching, foreign body sensation, watering, redness, discomfort, grittiness and blurring of vision. Distant vision and near vision were taken using Snellen chart, Best Corrected Visual Acuity was checked for each patient. Detailed slit lamp examination with ocular surface staining and dry eye tests i.e. schirmers test and tear film break up time test(TBUT) were done on first visit and follow up visits at 2 and 4 weeks. Duration of exposure to screen (mobile /laptop/ computer/ television) was noted on

each visit. Lubricating eyedrops available in our hospital supply were prescribed to every patient, dosage being as per severity of the disease.

RESULTS:

Amongst all the symptoms, maximum number of patients came with complaint of watering(92.7%) followed by redness (90%) and Foreign Body Sensation (72.7%). A lesser number of subjects had complaints of itching (28.2%) and Blurring Of Vision (27.3%) Females (62.26%) were found to be more involved than males (56.14%). Chi-Square test was carried out to find any significant association between the symptoms and screen time. Percentage of patients having dry eye disease in the age group 18-40 years was maximum (66.4%), followed by age group 41-60 years (31.8%). Least percentage of patients having dry eye disease belonged to age group >60 years (1.8%). Assessment of severity of symptoms based on Schirmer's and TBUT values shows that maximum percentage of patients had a screen time of 6-9 hours daily (70.0%) while lesser had a screen time of 3-6 hours daily (26.4%), the least being a screen time of 0-3 hours daily (3.6%).

Table 1:

Frequency Distribution of the Symptoms variables: (n = 110)

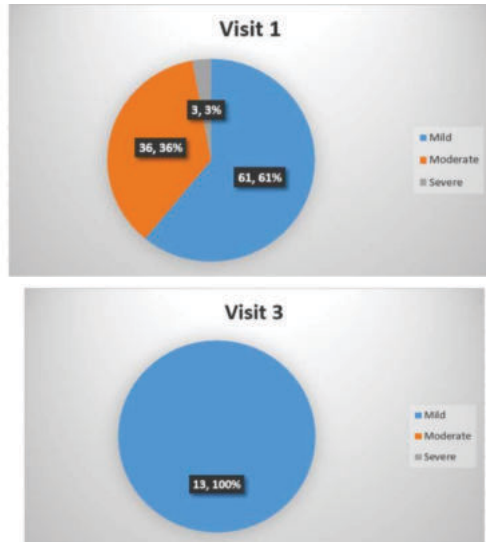
Variables	Categories	Frequency	Percentage
Itching	No	79	71.8
	Yes	31	28.2
Watering	No	8	7.3
	Yes	102	92.7
Foreign Body Sensation	No	30	27.3
	Yes	80	72.7
Redness	No	11	10.0
	Yes	99	90.0
Blurring Of Vision	No	80	72.7
	Yes	30	27.3

Table 2 :

Frequency Distribution of Test variables: (n = 110)

Variables	Categories	Frequency	Percentage
Schirmer's	Severe	3	2.7
	Marginal	38	34.5
	Normal	69	62.7
TBUT	Severe	3	2.7
	Marginal	37	33.6
	Normal	70	63.6

To calculate the Repeated measure of Visit 1, Visit 2, Visit 3; the 5 observations which was lost to follow-up (in Visit 3) was removed and so the total n = 105. The non-parametric Friedman test was conducted with the following results.



DISCUSSION:

The negative effect of prolonged screen time on ocular surface has been necessitated by the Covid-19 pandemic and even after that it continued In India, Bahkir and Grandee² surveyed 407 people (average age 27.4 years) through social media platforms and found that the average increase in screen time during lockdown was 4.8 +/-2.8 hours per day, resulting in an average screen time usage of 8.65 +/- 3.74 hr. Not surprisingly, 95.8% of respondents experienced at least one symptom related to digital device usage and 56.5% reported an increase in symptoms frequency and intensity during lockdown. In our study, analysis of screen time exposure shows that maximum percentage of patients had a screen time of 6-9 hours daily (70.0%) Longer screen time exposure of 6-9 hours in majority of patients indicate the rise of use of electronic devices due to Covid-19 pandemic in agreement with the above mentioned study by Bahkir and Grandee. Usually in most of the studies, females are affected more commonly than males^{3,4}. A study done by Jeewan Singh Titiyal, Ruchita Clara Falera, Manpreet Kaur et al. to study the prevalence of dry eye disease in north Indian population observed higher prevalence of dry eye in male population⁵. In our study, all the patients who came with the symptoms of dry eye 56.14% of males were diagnosed positive with diagnostic tests for dry eye and 62.24% females were diagnosed positive with diagnostic tests for dry eye. As per a study by Anushree Sharma and Holly.B.Hindman⁶. Dry eye is especially common in the elderly, occurring in approximately 5–30% of the general elderly population. The prevalence disparity by age ranges from 8.4% in subjects younger than 60 years old to 15% in patients 70–79 years old and 20% in those older than 80 years. As per studies done in pre-covid times^{7,8,9}, dry eyes affected the elderly population more due to various factors that predispose older adults to dry eyes including higher rates of systemic and topical medication use, lid laxity, hormonal changes

(menopause), inflammatory systemic conditions, and oxidative stress. The reversal in age groups to increase in dry eyes symptoms owing to the Covid-19 pandemic and lockdown^{10,11}. As per a study conducted in western India by Neha Shilpy, Dhaval Bharatkumar Patel¹², a total of 578 patients were included in the study. Of those, 95 (47.98%) patients had mild DED, 63 (31.82%) had moderate DED and 40 (20.20%) had severe DED. As per study by William F Davitt, Marc Bloomensten¹³, Mike Christensen, Anna E Martin 18, the effective management of dry eye must include a clinically meaningful reduction in ocular staining.

CONCLUSION–

With this study we can conclude that all patients with dry eye disease had atleast one or more symptoms. Amongst all the symptoms, maximum number of patients came with complaint of watering, followed by redness and Foreign body sensation. A lesser number of subjects had complaints of itching and Blurring of vision. The prevalence of dry eye was more in females than males. We can conclude that none of the 5 symptoms are statistically significantly associated with the screen time. The percentage of patients having dry eye disease in the age group 18- 40 years was maximum and maximum percentage of patients had a screen time of 6-9 hours daily. This can be attributed to online mode of schooling, frequent gaming and work from home scenario during covid 19 pandemic. Majority of patients had a mild disease followed by moderate disease while very few had severe form of disease. There was a statistically significant improvement in the patients after prescribing lubricating eyedrops at each of the visits.

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