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Original Research Article

Study of Correlation of VDT with Dry Eyes Among Young Population

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Abstract:

In present era of technology there has been profound increment in daily use of visual display terminals (VDT) like mobiles, television, computers, or digital screens. This increment is due to increased use of digital equipment in occupational, educational, and social media purposes. This increased dependence on VDT has reported to a rise in associated ophthalmology daily patient load with symptomatic visual complaints, including eye dryness, irritation in eyes, blurred vision, and headache. The reason behind is primarily due to reduced eye blinking habits and loss of tear film production. In this study we have tried to find out association of VDT with dry eyes among young population. We have conducted a systematic examination of Tear production measured by using the Schirmer test in students with a simple questionnaire form to mark daily uses of their screen time. As a result, we found a positive relationship between VDT prolong users and dry eye disease. In conclusion it is demonstrated that ocular events have been increased drastically in past few decades including dry eye disease. The increased use of smartphones has been the major cause for dry eye disease in this situation.

Keywords: Smartphone, Computer Use, Dry Eye, Eye Blinking, Tear Film Production.

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Introduction

Dry eye syndrome (International Classification of Diseases, 10th revision, clinical modification code H04.1) is modern day predominantly prevalent chronic disease affects mainly ocular-surface [1-7]. As per the International Dry Eye Workshop report, Dry eye syndrome can be defined as a disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear-film instability with damage to the ocular surface like cornea and conjunctiva can be due to various causes [1]. The common presentation of patients are dry eye sensation, foreign body sensation, photophobia, and redness of the eye. These symptoms can cause difficulties in visual acuity hance there can be impairment of work requiring visual concentration [8-15]. This entire problem can cause a negative impact on physical, social, and psychologic health and the overall sense of well-being [8-15].

The reason behind emergence of dry eye disease is decreased resting time, reduced blinking period there by enhancing time of exposure to ocular surface. This will ultimately lead to dry eye diseases and tear film defects. The reason behind the rapid rise in the number of cases of dry eye disease over the last few years is thought to be prolonged visual display terminal (VDT like television, monitors, mobile screens) exposure because of increased computer and mobile uses. VDT exposure has also become dominating as there is increment in information and technology which ultimately enhanced the widespread use of mobile technology and portable information terminals, especially Smartphone, among all age groups. The number of Internet users worldwide has grown from 6.5% to 43% between the year 2000 to 2015. In India there were 1.2 billion mobile phone users, among which 75 Crore were smartphone users in the year 2021; and according to news media it may rise to 1 billion by end of 2026.

We used subjective report of dry eye symptoms followed by objective findings from eye examinations to diagnose dry eye disease. Other studies, either primarily focused on subjective report of the symptoms or merely based on opportunistic diagnosis from OPD. In our study we selected subjects randomly and after fulfilling subjective query clinical examination of eye was done for the diagnosis of dry eye disease [2,4]; this diagnostic basis was considered appropriate because many times the condition rarely progresses to the stage of ocular discomfort without symptom presentation [1,13]. Sometimes general Internet and

heavy VDT users either may be unaware of dry eye disease despite the presence of symptoms or being addict they ignore the symptoms. Also, if they are aware of their problem many times, they do not receive medical intervention [14,15].

Aims and Objectives

1. To conduct a systematic examination of Tear production measured by using the Schirmer test.
2. To investigate the relation between dry eye and Smartphone users.
3. To draw attention to dry eye disease among general Internet users and identifying those with a higher risk of developing the condition.

Material and Methods

A systematic screening was conducted among MBBS students (n=100) at the department of ophthalmology, Sudha Medical College, Kota. All study participants were of age group 18 to 24 years of age. Informed consent was obtained from study participants. There were two parts of screening. In the first part participants will be asked to fill up self-screening questionnaire containing questions on dry eye symptoms and paper-based lifestyle questionnaire to provide relevant background data. i.e. the duration of their daily hours spent on mobile uses and other physical activities.

In the second phase we examined all participants and performed the Schirmer test, for evaluating tear production.

Subject Selection

Inclusion Criteria: All students (age 18-24 years) attending ophthalmology dept. during study period.

Exclusion Criteria:

- Subjects not willing to participate/ left out. Age more than 25 years.
- Known case of Diabetes mellitus, diabetes insipidus, Sjogren's syndrome, allergic eye disease, keratoconjunctivitis sicca, rheumatoid arthritis, lupus, scleroderma, sarcoidosis, thyroid disorder, vitamin A disorder.
- Subject on going treatment on antihistaminic, decongestants, on HRT
- Chronic contact lens users.

Results

Among 100 subjects 11 left study in between. 4 out of the remaining 89 subjects were excluded on findings of sjogren's syndrome and keratoconjunctivitis sicca.

VDT Users (Mobile/Computer/TV)	Duration <4 hours	Duration >4 hours
Total 85	55	30
Ocular symptoms:		
Ocular fatigue	42	25
Discharge	5	5
Foreign body sensation	5	7
Dry sensation	32	25
Itching	15	22
Excess tearing	15	5
Redness	2	5
Pain	2	5
Sensitivity to bright light	2	5
Blurred vision	5	8
Ocular examination:		
Emmetropia	28	5
Myopia	12	10
Hypermetropia	15	15
Schirmer test results: tear production		
>5 mm (normal)	41	8
≤5 mm (abnormal)	14	22

Among 85 participants 30 were identified as prolong VDT user and remaining 55 were considered as mild VDT user. The tear film abnormality was found high (73%) in prolong VDT users in compared to low in mild VDT users (25%).

In our study we found a positive relationship between VDT prolong users and dry eye disease. Though ocular symptoms were not enough to establish direct relationship between dry eye and VDT users; Schirmer test shows profound tear film production defect among VDT prolong users.

Discussion and conclusion

India is still emerging in profound use of VDTs. Young population is at risk of developing dry eye syndrome. Although several studies have been conducted earlier at several countries among variety of people groups such as elderly and

occupational groups, we have tried to establish a correlation between dry eye syndrome and VDT in young age group among students in our area.

Many common diseases including ocular diseases, psychosocial disturbance, metabolic disorders due to lack of activities are emerging with emergence of technology. Human race is at technological revolution. In many aspects it is beneficial only like medical and communication sectors. But excess addiction of technology will lead us to unhealthy environment, whether it is in terms of physical, social or atmospheric. Ocular events have been increased drastically in past few decades including dry eye disease. The increased use of smartphones has been the major cause for dry eye disease in this situation. The increase in visual tasks (continuously seeing monitor screen), an isolated lifestyle, sleep deprivation, impairments in circadian rhythms, lack of physical activities, increase in obesity and sedentary lifestyles; these all conditions can be progressed with excess use of VDTs along with dry eye disease. We strongly recommend for limitation of VDT timings, also there is need of social awareness campaign about disorders of excess use of VDT.

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