

17 IMPACT OF COMPUTER STRESS ON EYE A COMPARATIVE STUDY

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Introduction: *It is a computer era. All has to use computer. But certain people who are involved in computer profession have to use the computer for a long duration. Such prolong use of computer give significant stress to eyes. Today it is an epidemic of a computer vision syndrome. In this paper, common manifestations, prevention and treatment of computer vision syndrome especially emphasizing the symptom, the dryness of eye will be discussed.*

OBJECTIVE: *To find the prevalence of eye problems among the computer user:*

MATERIAL AND METHODS: *154 computer users who had exposure to computer screen display greater than six hour per day were assessed and the result were compared with those who were not exposed to computer. The main tools were Personal interview, questionnaire, and general eye examination.*

RESULTS: *Total six types of eye symptoms were prevailed among the computer users. They are eye strain/fatigue, Dry eye,, blurred vision,, eye irritation, pain in eye/headache, neckache, backache and other musculoskeletal problems. We also examined the eye for refractory errors. It was found that all the eye symptoms and refractory errors were statistically significantly more among the computer users compared to computer non users. Amongst the symptoms the most common problem found was eye fatigue/strain followed by dry eye..*

CONCLUSION: *The eye fatigue/strain followed by dry eye were the most common symptom found among the computer users.. Incidentally the problem is potential preventable and medically manageable. For that certain physiological behavioral modification is required i.e.*

frequent blinking

wide gaze vision,

regular break/ rest to eye ball.

Certain medicated drops are also useful for symptomatic relief.

Computer mechanics, office environment, lighting, reflexions, glare are also requires due attention to reduce eye stress.

Key word :Computer ,Eye problem, blinking

Introduction:

It is a digital era. Computer is integrated in each and every field of system may be medical, science ,literature, education, management ,administration... But certain people who are involved in software and computer profession have to use the computer for a long duration. Such prolong use of computer give significant

stress to eyes. The reason is that during computer our blinking rate is significantly reduced .we all blink through the day during waking hours .It is sign of waking –consciousness .Blinking is a physiological reflex to keep our eye balls lubricated and keep the eye away from dust ,particles and foreign bodies .During computer use ,the both the eyes are focused on computer screen and during this period ,the blink rate is decreased[from normal 12-15 per minutes to 4-5 per minutes] making our eyes dry and leading to an epidemic of a computer vision syndrome.

Aims and objectives: To find the prevalence of eye problems among the computer users:

MATERIAL AND METHODS:

154 computer users included bank employed, commuter engineers , data entry workers, .**who had exposure to computer screen display greater that six hour per day were assessed and the result were compared with those who were not exposed to computer. The main tools were Personal interview, questionnaire, and general eye examination.**

Permission for conducting the study was obtained from the various offices prior to the initiation of the study. The study subjects were explained the purpose of study and were assured about of the information so obtained.154[N1 group] computer users who had exposure to computer screen greater that six hour per day were assessed for eye problems by questionnaires and the result were compared with those who were not exposed to computer[54 N2 group]. The main tools were Personal interview, questionnaire.

RESULTS: Total five main eye symptoms-signs were examined among the computer users and non users at the end of working hours for

- 1] Eye strain/fatigue,
- 2] Dry eye,
- 3] Blurred vision,
- 4] eye irritation- red eye,
- 5] headache,

Prevalence of symptoms among computer uses N1 and not users N2

no	Symptoms	N1= 154	N2 =54
1	eye strain/fatigue	74	36
2	Dry eye	62	14
3	Blurred vision	42	14
4	eye irritation- red eye	16	2.2

5	Headache	43	22
P=<0.05			

Statistical tests: Students t test was used and P value was calculated manually.

Discussion:

The study documented the fact that eye related five symptom-signs were rated significantly more among computer users more than non users. Due to central inhibition of blinking reflex during prolonged use of computer , people **blink** less than normal leading to evaporation of tears and fluid coating one eye balls and leading dry eyes . **Blinking** produces tears that moisten the eye. Artificial tears have been found to be helpful to **prevent** and relieve symptoms of dry eyes that result from prolonged sessions at the **computer**. Blinking also keeps eyes safe from potentially damaging stimuli, such as bright lights and foreign bodies like dust. When a person gazed long time on computer screen ,he/she also exposes to hazardous effects of bright lights and foreign bodies like dust and even micro organisms. The eyelid provides suction across the **eye** from the tear duct to the entire eyeball to keep it from drying out creating a first line of defense ,as tears have bactericidal effects.

The human visual system is complex and amazingly adaptive ,but poor ergonomics make eyes to strain and leading various eye problems. During extreme commuter work load one blink less and get more work done by visual system but ultimately one has to pay the penalty .

Tear production ,circulation in anterior chamber of eye and drainage has been reviewed recently by high speed photography and found that the punctal openings are seen to elevate themselves from the lid margin at the start of the closing phase of the blink, allowing their forceful meeting and occlusion by the time the closing lid is halfway down. Completion of lid closure then compresses the canaliculi and lacrimal sac, forcing contained fluid through the drainage system. Thus blink forms a suction-pump like effect in circulating tears. During the latter part of this opening, the punctal areas are seen to "pop' apart suddenly as the vacuum is broken, and tear fluid from the marginal tear strips is drawn into the puncta in the first few seconds following the blink.As per one survey .150 to 200 million Americans, or 90 percent of computer users who work more than three hours a day on the computer are prone to develop computer vision syndrome.The National Eye Institute, again unsurprisingly, recently released data showing a 66 percent increase in the prevalence of myopia in the 25 years since the advent of the personal computer. It is estimated that today at least 75% of all jobs involve some level of computer use; this means three-quarters of the workforce are being exposed to numerous health problems, the same can be said of students and educators who do not go through any day without access to a computer for academic work. The figure for people working with and using computers recreationally is to increase considerably in the coming years so it is crucially important that these problems are identified and resolved sooner rather than later in an effort to reduce if not eradicate these problems.It was found that the lonizing radiation given off by monitors has severe detrimental effects on the eye and eyesight on a whole, and higher quality monitors with better resolution

are recommended . The most common form of Computer Vision Syndrome is a condition termed Dry Eye, which results in itchy, sore and even the illusion that something is stuck in your eye. The human eye basically prefers to look at the objects greater than 6 m away, thus work done on computer demands a close-up view which strains eye muscles and thereby leads to eye fatigue.

CONCLUSION: The eye fatigue/strain followed by dry eye were the most common symptom found among the computer users. Incidentally the problem is potential preventable and medically manageable. For that certain physiological maneuver and behavioral modification is required i.e. frequent blinking ,wide gaze vision, regular break/ rest to eye ball every 10 minutes. If such methods are used regularly one can avoid the use of lubricating drops though it is recommended and useful for symptomatic relief .Computer mechanics, office environment, lighting, reflections, glare also require due attention to reduce eye stress. To day the time is reached that computers are replacing our old pen and note books. The epidemics of computer vision syndrome is inevitable. And occupational health point of view ,the people working in the computer field should be emphasized as a field of concern in public health. In this context it is recommended to implement preventive measures and ergonomics of the working environment of the computer users This have a direct impact on their well being of computer users . Hence all the institutions and professionals themselves need to be sensitized regarding the importance of awareness of eye problems , regular eye checkups proper working conditions and preventive measures.

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