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Editorial

Digital eye strain: An emerging ocular morbidity

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American Optometric Association has defined digital eye strain (DES) as a spectrum of ocular and vision related problems which are due to continuous or prolonged usage of digital devices such as desktop, laptop, mobile phones, etc.¹ Increased use of digital devices during COVID times for work, online education and recreational purposes has led to significant upsurge in these cases.² Due to increase in websites and social media platforms, new movies and games, teenagers and youngsters are spending additional time on digital devices. DES is a multifactorial entity which has several contributing factors like reduced contrast levels of letters compared to background of digital screen, poor lighting conditions, improper posture during use of the device and infrequent blinking of eyes.

Symptoms of digital eye strain are grouped into 3 categories. Ocular symptoms are due to reduced blinking rate which leads to decreased wetting of ocular surface causing dry eyes, tiredness, burning sensation, foreign body sensation in eyes with itching and sensitivity to light.³ Second set of symptoms are accommodation or vergence related which causes increased blurred near or distance vision, difficulty in refocusing, diplopia, etc.⁴ There are some extraocular symptoms like body discomfort i.e, headache, neck pain, shoulder pain, and back pain.⁵

These set of symptoms are attributed to three mechanisms which lead to digital eye strain. First is ocular surface mechanism in which there is reduced eye

blink rate. Normally, eye blink helps in maintaining normal ocular surface through a complete cycle of secretion of tears, tear spread on ocular surface, evaporation and drainage of tears.⁶ Reduced eye blink rate gives rise to symptoms of dryness, redness, grittiness and burning sensation of eye. Second is accommodative mechanism which is secondary to prolonged use of digital devices which leads to increased demand in near work causing accommodation lag, increased convergence, etc.⁷ Third is the extraocular mechanism which is due to postural problems, improper lighting, sitting arrangement, improper distance between eye and screen.⁸ Excess use of digital device not only cause eye strain but may lead to ill effects on lifestyle / physical and mental health. Person may have sleep-wake difficulties, diminished total sleep, depression, anxiety and other behavior abnormality. Blue light from digital device causes disturbance in circadian rhythms and decrease melatonin secretion. Sleep deprivation may aggravate preexisting dry eye disease.

There is a necessity to increase awareness about DES specially in our young and vulnerable population since these devices have become an inseparable part of people's lifestyle. Eye health strategies and awareness campaign need to focus on at risk population. Awareness among digital device users can be spread through doctors, health care workers, non medical professionals, health and fitness experts, etc. Screen users should be trained to recognize symptom of DES like asthenopia, headache, neck ache, eye strain, etc. Innovation in screen technology has reduced the

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incidence of DES which include high resolution screens with inbuilt antireflective coating, matte finished glass, etc. Evaporative dry eye associated with digital device use need to be addressed by frequent eye blinking, taking regular breaks from monitor, using preservative free lubricant and improved room lighting, etc can help in reducing digital eye strain.

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