BLUE LIGHT IMPACT ON SCHOOL GOING CHILDREN

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ABSTRACT:

Light passes through the media of the attention to the retina where photoreceptors transform it into an electrochemical signal. Humans depend upon this process for image-formation and regulation of daily sleep-wake cycles. Commonly encountered light emitted by the sun and private electronic devices contain significant amounts of high-energy, shortwavelength blue light.1 Ultraviolet (UV) light contains more energy than blue light, but is absorbed by the cornea and lens, limiting retinal exposure. Visible blue light may potentially be harmful to the human retina, because they are often absorbed by the retinal pigment epithelium (RPE) and certain photoreceptors, generating localized oxidative and thermal stress.

INTRODUCTION

1. Blue light

Sunlight is that the main source of blue light, and being outdoors during daylight is where most children get maximum exposure to blue light. But there are many indoor sources of blue lightincluding fluorescent and LED bulb, computer, smartphone and flat-screen television which emits significant amounts of blue light. The amount of HEV light these devices produce is merely a fraction of that produced by the sun.

In the visible spectrum, short wavelength between 415 nm & 455 nm is closely related to eye sight damage and most harmful rays. This high energy blue light passes through the cornea and the crystalline lens. Blue light can penetrate through the lens through the retina and cause retinal photochemical damage.

However, the quantity of time children spends using these devices and therefore the proximity of those screens to the user's eyes, may be an explanation for concern for several eye doctors and other health care professionals.

2. HEV light rays

The short-wavelength, high-energy light rays on the blue end of the light spectrum scatter more easily than other light rays once they strike air and water molecules within the atmosphere. the upper degree of scattering of those rays makes the cloudless sky look blue.

3. Blocking blue light

Anterior structures of the human eye (the cornea and lens) are very effective at blocking UV rays from reaching the light-sensitive retina at the rear of the eyeball. In fact, one-hundredth of UV radiation from the sun reaches the retina, if you are not wearing sunglasses.(Remember, that sunglasses that block one hundred pc of UV are essential to guard these and other parts of the attention from damage that would cause cataracts and even cancer.)On the opposite hand, virtually all visible blue light passes through the cornea and lens and reaches the retina.

4. Blue light exposure

The fact is that blue light penetration all the way to the retina (the inner lining of the rear of the eye) is vital. Laboratory studies have also shown that an excessive amount of exposure to blue light can damage light-sensitive cells within the retina.This causes changes that resemble those of degeneration, which may cause permanent vision loss.Many eye care providers are concerned that the added blue light exposure from computer screens, smart phones and other digital devices might increase an individual's risk of degeneration later in life. More research is required, though, to work out what proportion natural and man-made blue light is "too much blue light" for the retina.

5. Digital eye strain

Because short-wavelength, high energy blue light scatters more easily than other light, it's not as easily focused. When you are looking at computer screens and other digital devices that emit significant amounts of blue light, this unfocused visual "noise" reduces contrast and may contribute to digital eye strain.

Research has shown that lenses that block blue light with wavelengths but 450 nm (blue-violet light) increase contrast significantly. Therefore, computer glasses with yellow-tinted lenses may increase comfort when you're viewing digital devices for extended periods of your time.

6. Blue light protection

Parent may be advised through the eye care professionals of either applying blue light filter upon electronic devices or they can make their child wearing zero / power glasses with blue light protection feature.

7. All blue lights great

It's well documented that some blue light exposure is important for eye health. Research has shown that high-energy light boosts alertness, helps memory and cognitive function and elevates mood.

Exposure to blue light during daytime hours helps maintain a healthful biological time. But an excessive amount of blue light late in the dark (reading a completely unique on a tablet computer or e-reader at bedtime, for example) can disrupt this cycle, potentially causing sleepless nights and daytime fatigue.

EFFECTS OF BLUE LIGHT

Computer Vision Syndrome Computer vision syndrome features a combination of symptoms, including: fluctuating vision, tired eyes, dry eyes, headache and fatigue. Other non-visual symptoms of computer vision syndrome include neck, back and shoulder pain.

Unhealthyposture

When employing a computer or digital device for prolonged periods, it's normal to start out slouching inward, rounding the rear and shoulders, then tilt the top back and adjust the chin forward. This unnatural (and unhealthy) posture — called "turtling" — results in many of the non-visual symptoms of computer vision syndrome.

Nearsightedness

Vision researchers believe increased screen time among children may be a significant risk factor for the event and progression of nearsightedness (myopia). The prevalence of myopia has grown significantly within the previous couple of decades and this trend coincides with the increased use of computers and digital devices by children.Increased exposure to blue lightHigh-energy light called blue light is emitted by the LED screens of computers, tablets, smartphones and other digital devices. Although the foremost significant source of blue light exposure is natural sunlight, many researchers and eye doctors are concerned that the added blue light exposure from computers and digital devices might increase an individual's risk of age-related eye diseases like degeneration later in life.

HOW TO AVOID:

Encourage frequent visual breaksOne of the simplest belongings you can do to scale back your child's risk of digital eye strain is to urge them to follow the "20-20-20" rule: Every 20 minutes, take your eyes off your screen and appearance at something that's a minimum of 20 feet away for a minimum of 20 seconds.

Encourage frequent posture checks

The time taken to follow the 20-20-20 rule is additionally an honest time to take a seat up straight and realign the top , neck and shoulders. Moving the top slowly to the proper and left and also up and down can relieve strained muscles and reduce fatigue.

Establish media-free times

It's a great idea to determine media-free times every day to interrupt your child's fixation on digital devices, reduce eye fatigue, and limit blue light exposure. Use this point to attach as a family.Schedule a minimum 6 monthly / annual eye examination in a routine manner.

Finally, schedule a comprehensive eye exam for your children before the beginning of each academic yearadditionally, ensure your child's eyes are healthy and seeing well.

Results:

Although the light emitted by personal electronic devices is not bright enough to damage the human retina, it is able to stimulate blue-light-sensitive ganglion cell photoreceptors that regulate circadian rhythms. As a result, cellular telephone, tablet and personal computer use before bedtime can delay sleep onset, degrade sleep quality and impair alertness the following day. Extended use of these devices has also been shown to cause symptoms of dry eyes, blurred vision and headaches. Limitation of personal electronic device use before bedtime is recommended to be the most effective method for reducing light-induced sleep disruption in children. The use of amber-tinted spectacle lenses during the use of electronic devices immediately before bedtime has shown promise as a strategy to reduce their altering effects, but such filters require more investigation before this practice can be advocated. Any potential benefits to sleep quality of blue-blocking antireflective coatings have not been investigated.

Conclusion:

The increased use of digital devices by adolescents brings a replacement challenge of digital eyestrain at an early age. Our study reports the patterns of device usage by school children, evaluates factors related to eyestrain and highlights the necessity for further investigation of those issues.

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