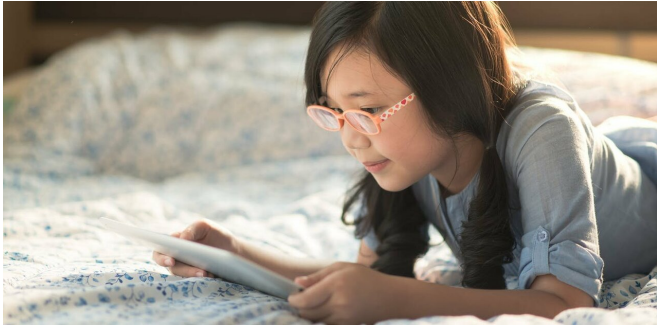


# Too much screen time linked to an epidemic of myopia among young people

13 February 2019, by Langis Michaud



Today's young people don't play outside as much as their predecessors and are heavy users of electronics. Credit: Shutterstock

Ask anyone about the benefits of technology and it probably won't take them long to rhyme off a list of examples: it helps broaden your knowledge, connect with friends, both new and old, and allows you to see things you've never seen before.

But what about the drawbacks? Here's a major one: increased [screen time](#) is hard on your eyes.

In fact, more and more young people are wearing glasses to correct their nearsightedness. This trend has prompted optical health experts to determine if the use of electronic devices such as computers, tablets and smart phones is leading to a deterioration in sight that is reaching epidemic proportions.

Let's take the example of Pauline —although she could just as easily be a David or a Jason. She is 10 years old and a studious child, doing well in school. Like any [young person](#) her age, she loves to use her tablet computer to study or have fun. She's on it two hours a day, plus weekends.

Pauline may be in for a change, however. She has recently been diagnosed with nearsightedness and

her optometrist has strongly recommended that she —and her parents —limit her use of electronic devices and spend more time playing outside.

Pauline isn't happy. She thinks it's not fair.

But her case raises the question: what is the link between the use of electronic devices and the appearance of [myopia](#)?

## A public health issue

Forty per cent of North Americans are affected by myopia. The number of cases [doubled between 1972 and 2004](#) and continues to grow at a rate that [qualifies the phenomenon as an epidemic](#).

In Europe, [myopia is prevalent among 42.2 per cent of adults aged 25 to 29 years](#), almost twice that of adults aged 55 to 59 years.

This suggests there is a real public health issue facing us —and not just the common problem of an error in the refraction of the eye which shows up as blurred vision when looking into the distance.

In fact, high amounts of myopia [significantly increases the risk of major ocular health disorders](#) such as retinal tearing (21 times greater), glaucoma (40 times) or cataracts (six times).

An eye that becomes short-sighted becomes longer. The stretching is proportional to [the increase in myopia](#). The more the eye stretches, the more the retina, which lines the inside of the eye, becomes thinner. Symptoms such as cracks, abnormal development of subretinal blood vessels and bleeding may appear.

Ultimately, the very nearsighted patient has a more than 50 per cent risk of spending the rest of his or her life legally blind —in other words living with vision reduced by 60 per cent. This means that the [length of their eye exceeds 28 mm](#) (the normal

length is 23 mm) or that [the myopia levels exceeds six diopters](#). (Diopters is a unit of measurement used to calculate eyesight —the further away from zero indicates a worsening in vision.) It is important to intervene before this happens to avoid these levels.

(In Canada, [legal blindness is defined by a visual acuity of less than 20/200](#) in the best eye with the help of glasses or [contact lenses](#). A legally blind person therefore sees, at best, 20 times worse than a person with normal acuity.)

### What's behind the epidemic?

There are many causes of onset myopia. Genetics plays an important role but epigenetics —the environment in which the child evolves —is [a more important factor](#).

And what has changed in our environment to explain the recent myopia epidemic? The impact of technology, which has seen a boom in recent years, is being closely examined.

For example, a rapid increase in visual problems has been noted since the introduction of the smartphone in 2007. While the device itself does not emit harmful radiation, it requires the user to read its screen at a distance of 20 cm rather than the normal distance of 45 cm to 50 cm. It has been suggested that this close distance [boosts the risk of developing myopia by eight times](#), especially if both parents are myopic.

Ambient lighting also plays a role because [the use of fluorescents](#), such as in classrooms, also promotes myopia. When a tablet is used in such an environment, the effect is multiplied tenfold.

Unlike books printed on paper, [tablet](#) and computer screens are optically associated with so-called chromatic aberrations. The shortest wavelengths (blue light) are perceived in front of the others by the eye, which generates a myopia stimulus. There is a dose and response effect here, suggesting that prolonged use leads to more negative effects.

Today's [young people](#) don't play outside as much as their predecessors and are heavy users of

electronics. However, [exposure to daylight has a protective effect against myopia](#). These beneficial effects are decreased, but not negligible, [during less sunny months](#) or when [myopia is already present](#).

### Possible solutions

The purpose of myopia treatment is to reduce the rate of progression of the dioptric, but above all to slow down the elongation of the eye. If, obviously, we cannot play with genetics, it is imperative to influence epigenetics and therefore the environment in which the child evolves.

Therefore, using any [electronic media](#) before the age of two should be avoided, [even if it's only for a few minutes](#). A limit of one hour per day should be the rule for those between two and five years of age and the emphasis should be put on educational sites or applications that promote interactions between the parent and child.

While school requests should be taken into consideration, the use of electronic media should continue to be limited as the child gets older. A maximum of one hour, besides school work, must be observed for good eye health. A two-minute break after every 30 minutes of device use will also lessen harmful effects and [exposure to a device should be avoided at least one hour before sleep](#).

Children should also get a minimum of 45 minutes of daylight per day. They can get this by walking to school or participating in such activities as regular outdoor sports.

The next step is to ensure the co-ordination of both eyes, from far away but especially close up. An optometrist will need to perform an orthoptic check-up and correct, by exercise or optical means, any anomaly that may have been detected.

Finally, optical correction must be chosen with the goal of slowing down the progression. In rare cases, glasses with anti-myopia lenses may be prescribed. They provide a [deceleration rate of about 30 per cent](#). Specialized contact lenses are often preferred and offer control ranging from 50 per cent to 80 per cent. The contact lens treatment

is available from the age of seven, and will be periodically reassessed according to the child's changing needs.

In short, myopia is not just a commonplace vision defect. It is a significant risk factor for serious eye disease. We must therefore do everything possible to slow its progress and protect our children's vision—and that means also reviewing their relationship with electronic devices.

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