

OPHTHALMOLOGY

Slowing down myopia

Singapore has a high incidence of myopia. What can be done to impede the progress of this condition, especially when it affects so many of our children?



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According to a Ministry of Health report, 80% of Singapore's students are myopic by the time they turn 18. The condition affects 9–15% of preschool children, 25% of seven-year-olds, 31% of eight-year-olds, 50% of nine-year-olds and 62% of 12-year-olds.

Besides its economic cost, estimated to be US\$268 billion worldwide per year, myopia — even at low and moderate levels — increases the risk of more serious eye conditions such as myopic maculopathy, retinal detachment, cataracts and glaucoma.

Contributing factors

Being myopic (also near- or short-sighted) means the light rays focus at a point in front of the retina rather than directly on its surface. This occurs when the eyeball is too long relative to the focusing power of the cornea and lens of the eye. Myopia can also be caused by the cornea and/or lens being too curved for the length of the eyeball. In some cases, myopia is due to a combination of these factors. As a result, near objects will appear sharp, while those further away will appear blurry.

There is evidence that some forms of myopia have genetic origins. Studies among children in Singapore and Australia show that total time spent outdoors resulted in lower myopia, although the protective mechanism is not well understood. Near work, such as reading at distances shorter than 30cm, is associated with a higher incidence of myopia in studies among children in the US, Australia and Singapore. It is thought that intensity of near work with few breaks may be more important than the total hours.

It could be a good idea to increase daylight exposure and reduce the intensity of near work to reduce the onset of myopia.

Slowing it down

According to the World Society of Paediatric Ophthalmology & Strabismus' Myopia Consensus Statement, the best treatment to slow the progression of myopia with an appropriate risk-benefit ratio is low-dose atropine 0.01% eyedrop. Although they are not exactly sure how it works in retarding myopia progression, scientists suspect that atropine acts directly or indirectly on the retina or scleral, inhibiting thinning or stretching of the scleral, thus reducing the elongation of the eyeball. A 0.01% solution of atropine slows myopia progression by at least 50%, with fewer visual side effects compared with higher doses of atropine.

In orthokeratology, myopic patients wear special contact lenses overnight to temporarily flatten the cornea. Overall, this method slows down myopia by about 40%, but carries risk of infection (microbial keratitis). Other disadvantages include cost, discomfort, problems with insertion and removal, and reduced visual acuity compared to glasses or daily-wear contact lenses as the day progresses. In addition, there is no good controlled long-term study demonstrating sustained myopia control effect. [🔗](#)

