Child **Myopia**

www.childmyopia.com

What is child myopia?

Myopia, often referred to as nearsightedness or short-sightedness is a common eye condition in which light is focused in front of the retina, resulting in blurred distance vision. People with myopia can often see quite clearly at close distances but distant objects will be blurred.

The Myopic Eye

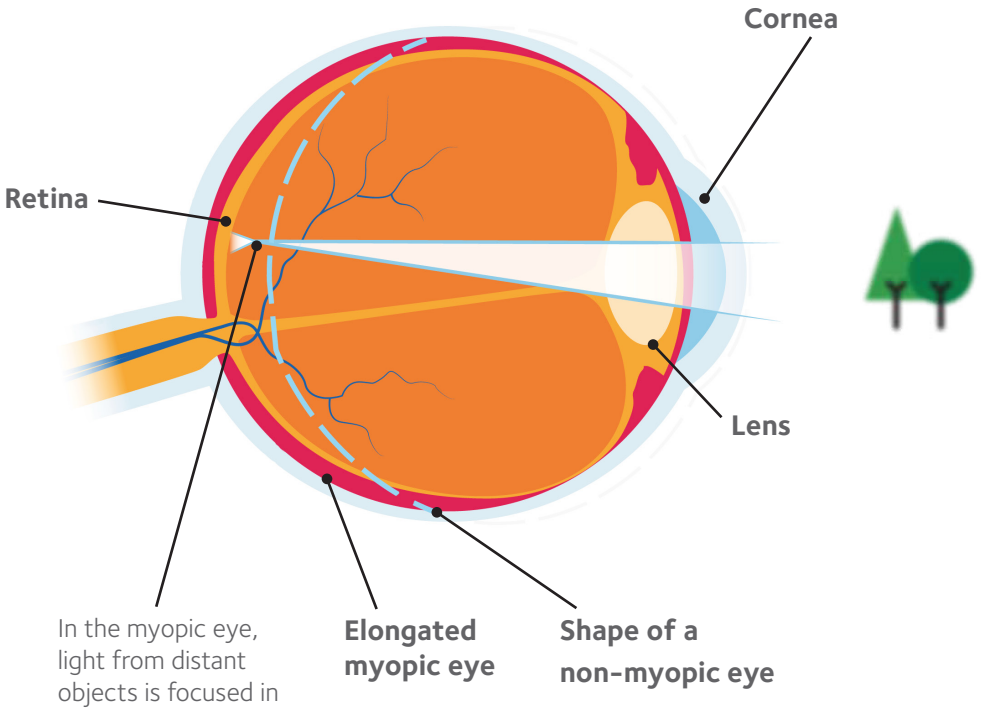
Eyeball growth occurs through childhood and adolescence. Myopia arises if the eyeball grows too long for the focusing power of the eye. Myopia typically onsets in childhood and progresses until maturity. The elongated eye may create structural problems which could increase the lifetime risks of certain serious eye conditions including myopic maculopathy, retinal detachment, cataracts and glaucoma.[1]

1. Tideman JWL, Snabel MCC, Tedja MS, et al. Association of Axial Length With Risk of Uncorrectable Visual Impairment for Europeans With Myopia. JAMA Ophthalmol. 2016;134(12):1355–1363. doi:10.1001/jamaophthalmol.2016.4009

The Myopic Eye

There are two reasons why myopia causes blurred distance vision:

1. **The eyeball grows too long.**
2. **The cornea is too curved for the length of the eye.**



Causes of Myopia

There are two main risk factors for a child developing myopia: **lifestyle** and **family history**.

Lifestyle

Modern lifestyles may influence the development of myopia.

These include:

Low levels of outdoor activity[2]

Low levels of light exposure[3]

Prolonged near tasks[4] such as reading and gaming on portable devices.

Family history

The likelihood of developing myopia, particularly high myopia increases when one or both parents are myopic.[5] However the exact link between a family history of myopia and the development of childhood myopia remains uncertain.[6]

2. He M, Xiang F, Zeng Y et al. Effect of time spent outdoors at school on the development of myopia among children in China: A randomized clinical trial. JAMA 2015; 314:1142-1148
3. Read SA, Collins MJ, Vincent SJ. Light exposure and eye growth in childhood. Investigative Ophthalmology and Visual Science 2015: 56(11):6779-6787
4. Ip JM, Saw SM, Rose KA, Morgan IG, Kifley A, Wang JJ, Mitchell P. Role of near work in myopia: Findings in a sample of Australian school children. Investigative Ophthalmology and Visual Science 2008:49(7): 2903-2910
5. Lim LT, Gong Y, Ah-Kee EY, Xiao G, Zhang X. Impact of parental history of myopia on the development of myopia in mainland China school-aged children. Ophthalmology and Eye Disease. 2014;6:31-5
6. Ip J, Huynh S, Robaei D, Rose K, Morgan I, Smith W, Kifley A, Mitchell P. Ethnic differences in the impact of parental myopia: Findings from a population-based study of 12-year old Australian children. Investigative Ophthalmology and Visual Science. 2007:48:2520-2528

Reducing the progression of myopia in children

Myopia is rapidly becoming a serious public health concern worldwide, yet research[7] shows that 65% of Australian parents (with children 0-17 years old) and 69% of New Zealand parents do not know what myopia is, and only 12% of parents in both countries recognise the long-term eye health risks associated with myopia.

This is of significant concern given that the risk of developing associated ocular health complications later in life, including retinal detachment, glaucoma, cataracts and myopic maculopathy increases along with any increase in myopia.[8]

It has been established that managing myopia in its early stages can slow its progression, reducing the potential risk of developing high myopia and its associated conditions.[9] This not only involves correcting the blurred distance vision associated with myopia but also employing treatments and strategies proven to slow the progression of myopia in children.

7. CooperVision Australia and New Zealand. Child Myopia in Australia and New Zealand – Consumer Perceptions Surveys. Conducted by YouGovGalaxy August/September 2018, between Wednesday 29 August and Monday 3 September 2018. The sample comprised 1,003 Australian parents and 500 New Zealand parents of children at home aged 0-18 years
8. Holden BA, Fricke TR, Wilson DA, Jong M, Naidoo KS, Sankaridurg P, Wong TY, Naduvilath TJ, Resnikoff S, Global Prevalence of Myopia and High Myopia and Temporal Trends from 2000 through 2050, Ophthalmology, May 2016 Volume 123, Issue 5, Pages 1036–1042.
9. Sankaridurg PR, Holden BA. Practical applications to modify and control the development of ametropia. Eye 2014; 28:134-141

Did you know?

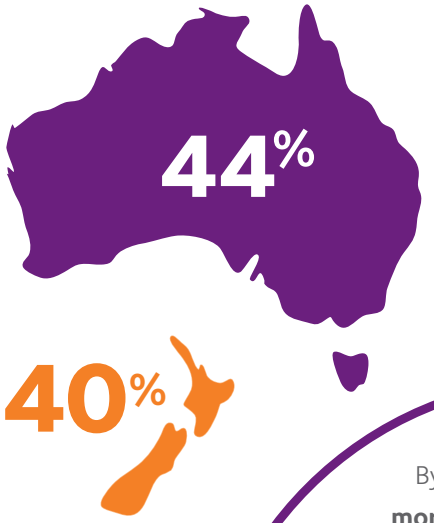
MYOPIA
IS PROGRESSIVE.

It will begin as low myopia but may progress in severity to moderate or high myopia. The earlier myopia starts, the greater chance your child has of developing high myopia.[10]

The majority of myopia **progression typically occurs during childhood** before possibly stabilising in late adolescent years.[11]

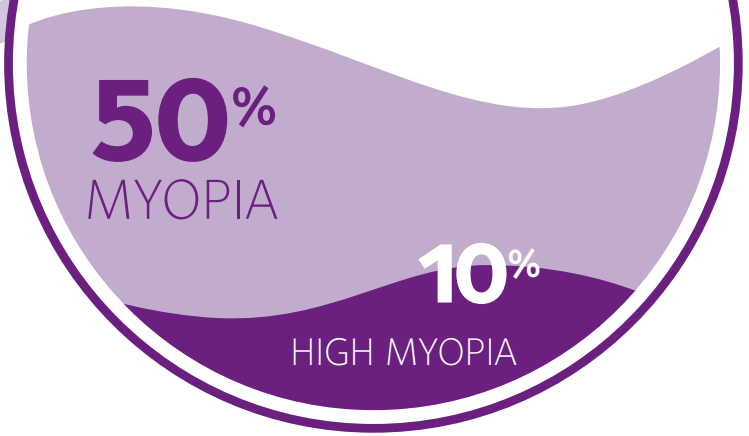
31% OF AUSTRALIAN CHILDREN **HAVE NEVER HAD AN EYE TEST**

28% OF NEW ZEALAND CHILDREN **HAVE NEVER HAD AN EYE TEST**



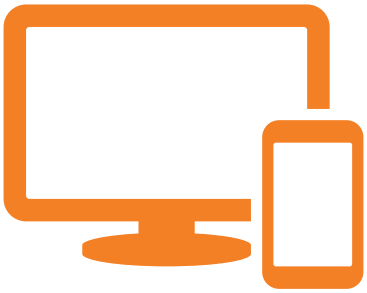
44% of Australian children and **40% of New Zealand children** have not been to an optometrist to have an eye test before their ninth birthday.[12]

By 2050 it is predicted that **more than half of the world's population will have myopia**[13] (short-sightedness) and 10% will have high myopia.



PROLONGED NEAR TASKS MAY PLAY A ROLE IN DEVELOPMENT OF MYOPIA.

Over 90% of Australian and New Zealand parents are not aware of the role that excessive screen time (TV, computers, mobile devices) may play in myopia prevalence and progression.



10. Gifford P, Gifford KL. The Future of Myopia Control Contact Lenses. Optom Vis Sci.; 93:336-43, 2016 Apr.
11. Morgan P. Is Myopia Control the Next Contact Lens Revolution? Optician 2016.
12. CooperVision Australia and New Zealand: Child Myopia in Australia – consumer perceptions survey. Conducted by YouGovGalaxy August/September 2018.
13. The impact of myopia and high myopia: Report of the Joint World Health Organisation – Brien Holden Vision Institute Global Scientific Meeting on Myopia. University of New South Wales, Sydney Australia. 16-18 March 2015.

Complications of Myopia

The risk of developing any of these conditions increases along with any increase in myopia.[14]

RETINAL DETACHMENT

Retinal detachment is the separation of the retina (light-sensitive tissue that lines the inner surface of the back of the eye) from the outer layers which requires emergency surgery to prevent vision loss.

CATARACTS

Cataract involves the clouding of the lens within the eye which interferes with clear vision. Surgical removal of the cataract and its replacement with an artificial intraocular lens is needed to restore clear vision.

MYOPIC MACULAR DEGENERATION

Myopic macular degeneration is a disorder of the central area of the retina responsible for detailed vision. The stretching of the retina leads to permanent degeneration of the cells at the macular leading to irreversible vision impairment. There is currently no treatment available, though in certain cases, injections can minimise swelling if abnormal blood vessels develop at the macula.

NORMAL VISION

Unobstructed and clear vision from near to distance.

These images are simulated.

14. Holden BA, Fricke TR, Wilson DA, Jong M, Naidoo KS, Sankaridurg P, Wong TY, Naduvilath TJ, Resnikoff S, Global Prevalence of Myopia and High Myopia and Temporal Trends from 2000 through 2050, Ophthalmology, May 2016 Volume 123, Issue 5, Pages 1036–1042.

Myopia Management

It is not only eyesight that suffers. It is important to remember that the impact of myopia is very personal and can potentially affect an individual's quality of life. Higher degrees of myopia can not only be a visual impairment, but may also have financial, social and personal consequences.[16]

If a child has been diagnosed with myopia, it is vital that parents not only discuss how to correct their short-sightedness with their Optometrist, but also what management options are available to slow the progression of myopia, and which will best suit the child and their lifestyle.

There are a number of recognised management options with more being developed. Many are available to Optometry and are already in regular use.

For more information and resources visit www.childmyopia.com

16. Rose K, Harper R, Tromans C et al. Quality of life in myopia. British Journal of Ophthalmology 2000; 84:1031–1034

Notes

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