

300-DEGREE  
MYOPIA AT  
AGE FIVE; 600  
DEGREES BY AGE  
SEVEN. EVELINE  
GAN FINDS OUT  
HOW ONE CHILD'S  
NEARSIGHTEDNESS  
SPIRALLED OUT  
OF CONTROL.



PHOTO: CORBIS

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# NO END IN

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**A**t five years old, Kelvin's\* eyesight was so bad that he could hardly make out what his kindergarten teacher was writing on the whiteboard.

His mother, Angeline Koh, a 41-year-old stay-at-home mum, got the shock of her life when an eye check revealed that he had myopia of over 300 degrees in his left eye. His right side wasn't much better either, at around 200 degrees.

Before the check-up, she never suspected that her son had blurry vision. "At home, there was no need to look at faraway objects or words, so we didn't realise that he could not see clearly. Plus, he was so young, nobody thought his eyesight would be so bad," she explains.

That was just the beginning of the boy's woes. As his myopia began rising at the rate of 100 degrees every six months, Angeline felt panic creeping in: "His eyesight was worsening at an alarming rate. It was very scary."

By the time he started Primary 1, he was wearing spectacles with thick lenses of 600 degrees on the left side, and 350 degrees on the right. He's now nine years old.

## THE MYOPIA EPIDEMIC

Kelvin is just one of the many short-sighted kids in Singapore, which has one of the highest myopia rates in the world.

Myopia affects about 7 per cent of five-year-olds here, says Dr Zena Lim, consultant at the Ophthalmology Service at KK Women's and Children's Hospital (KKH). She is also a consultant at the Paediatric Ophthalmology and Adult Strabismus Service at the Singapore National Eye Centre (SNEC).

One in five Singapore kids are myopic when they start primary school. By the time they are 18 years old, the figure goes up to seven in 10, shares Dr Inez Wong, consultant ophthalmologist and director of the Paediatric Ophthalmology and Strabismus Service at Eagle Eye Centre.

Kelvin's 600-degree short-sightedness, however, makes him a high-myopia statistic; most Singapore kids have more moderate myopia of between 200 and 400 degrees, says Adjunct Associate Professor Audrey Chia, senior consultant at the Paediatric Ophthalmology and Strabismus Service at SNEC and KKH. She is also the senior clinical investigator and co-head of the Myopia

Research Unit at the Singapore Eye Research Institute.

There is currently no local data on kids with this extreme form of myopia, but about 10 per cent of adults here have it, compared to just 2 per cent in Western countries, Dr Wong points out.

Why is Singapore facing a myopia explosion? Doctors blame a combination of risk factors: bad genes and an environment focused on too much indoor activity and near work.

In Kelvin's case, his sedentary activities and his parents' genes could have dealt a double blow to his eyesight. Both his parents have high myopia of over 600 degrees.

Unlike his elder sister, who loves outdoor activities, Kelvin is a homebody who prefers to read and play computer games. Now in secondary school, his sister's myopia has stabilised at 200 degrees.

Dr Lim points out that excessive near work is a major contributing factor of myopia. "On the other hand, we now know that spending time outdoors protects you against myopia. This may partly explain the differences in severity of myopia between Kelvin and his sister," she says.

## TOO HIGH, TOO FAST

In Singapore, myopia usually sets in when the child is around seven to eight years old and progresses most rapidly when he is between the ages of eight and 12, says Dr Wong. The earlier he gets it, the higher his chance of it spiralling to extreme levels.

Angeline confesses that she has "paid a small fortune" to have Kelvin's lenses changed six times, and spectacle frames four times, because of his deteriorating eyesight.

She doesn't mind paying more for better frames - each of them cost about \$300. "Kids are very active and, sometimes, they get into minor accidents. Some of his friends have injured themselves while wearing poor-quality frames, so I don't want to take a risk," she says.

She jokes about how her face would turn pale whenever she learnt that Kelvin's myopia had worsened, because that would mean another investment of a few hundred dollars.

Humour aside, Angeline has every reason to worry. According to Dr Lim, children with high myopia face

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# SIGHT?

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a greater risk of developing other eye conditions – such as glaucoma, cataracts and retinal detachment – at an earlier age in adulthood. All of them can lead to blindness.

"My myopia developed only when I was in secondary school, and it has already reached 600 degrees," she says. "Kelvin was only in Primary 1 when he reached the same degree. I was very worried for him."

## SLOW IT DOWN

The bad news is that once Junior develops myopia, there's nothing you can do to reverse the condition. According to Dr Wong of Eagle Eye Centre, most treatment strategies focus on slowing its progression.

"The degree will never decrease, only increase, so catching it early may allow parents to implement measures like increasing outdoor time," she says.

To prevent his vision from deteriorating further, Kelvin was put on atropine eye drops, which his mother helps to instil three times a week. This therapy is currently the most effective method of slowing down myopia (see *What Works?*) and is the only one well-proven by several clinical studies, says Dr Lim of KKH and SNEC.

It seems to have worked. Kelvin, now aged nine, has switched to a lower dose treatment and his short-sightedness has stabilised in the last two years.

According to Dr Lim, who treated him, the drops are suitable for school-going children with moderate to high myopia, as well as those whose myopia progress rapidly over time.

Studies show that higher-dose 1 per cent atropine eye drops can slow down myopia by 80 per cent over two years, while the lower-dose 0.01 per cent version slows it down by 50 to 60 per cent over the same period of time, says Dr Lim.

There are some side effects with this treatment, but the discomfort is a small price to pay. "Kelvin's eyes became sensitive to light, and he feels uncomfortable when he is out in the sun. But he knows the eye drops are good for him, so he doesn't complain much," says Angeline.

## CHANGE YOUR LIFESTYLE

While the atropine treatment may be an eyesight-saver, Dr Wong advises parents to first try some simple lifestyle changes to stem myopia progression.

Dr Lim suggests limiting near activities such as reading and using handheld gadgets to only 30 minutes at a time. Rest the eyes after that, and encourage more outdoor activities.

Prof Chia of SNEC and KKH adds that parents should aim to let Junior enjoy about two hours of outdoor activity daily. Some exposure to daytime sunlight is also helpful in protecting eyesight.

Kelvin's myopia scare prompted Angeline to change his lifestyle habits, too. She now sets a 15- to 30-minute limit on his computer time, and has enrolled him in several outdoor sports like swimming and wushu.

"Now, he loves outdoor games like his sister. Hopefully, with the eye drops, his myopia will remain under control," she says. 🐾

*\*Name has been changed.*



## WHAT WORKS?

*Young Parents* asks Dr Inez Wong, consultant ophthalmologist and director of the Paediatric Ophthalmology and Strabismus Service at Eagle Eye Centre, which myopia treatment really works.

### ● BACKED BY SCIENCE

Atropine eye drops have been shown to be the most successful in slowing myopia progression. Clinical trials by the Singapore National Eye Centre and the Singapore Eye Research Institute have shown that a low dose (0.01 per cent) of atropine can slow down myopia progression by 50 to 60 per cent over a two-year period, with few side effects like dry eyes or allergies.

But Dr Wong advises parents to try more conservative measures like increasing outdoor time first. Recent studies show that kids who spend more time outdoors have a lower risk of myopia.

### ● MAYBE

Orthokeratology contact lenses show some promising results but need to be further evaluated in clinical trials, according to Dr Wong. These lenses are worn overnight to reshape the cornea (the transparent front part of the eye), and removed in the morning.

However, this treatment should not be taken lightly. Not all children are able to wear contact lenses and there is also a risk of infection, which can potentially lead to blindness, she warns.

### ● WEAK EVIDENCE

Less invasive myopia "cures" such as progressive lenses, prismatic bifocal and pinhole spectacles have not been proven to work.

"I tell parents that while there is no harm in trying these methods – if they do not mind the extra cost – I am not convinced that they have much effect," says Dr Wong.