

Parents opt for unapproved treatments instead of glasses for their children

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Story highlights

Myopia, or nearsightedness, is on the rise worldwide

Orthokeratology and 0.01% atropine eye drops are said to stop a child's vision from getting worse

(CNN) — "My daughter Samantha got glasses in second grade," says Yiwen Lee, a mother of two and an airline customer service representative. Calling from the road after dropping her kids off at school, Lee explained how within a year, her daughter needed to wear glasses all the time, her eye doctor even recommending a stronger prescription.

Lee turned to her closest friend, not an expert in the field, for advice. The friend recommended orthokeratology, or OrthoK, which Lee says kept her child's eyesight from growing worse.

"My very close friend, her daughter when she started doing this was in the second grade, and now she graduated from

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same vision prescription over 10 years: "It increased a little bit, but not that much," she said, thanks to OrthoK.

OrthoK is "like orthodontia for the eye: You're applying a force to a part of the eye that controls focusing," explained Dr. Thomas Steinemann, a spokesman for the American Academy of Ophthalmology.



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They've improved just a little bit, but my eyes are better now."

Although the Food and Drug Administration has approved OrthoK to correct vision for people of all ages, Steinemann notes, the agency does not have enough evidence to approve OrthoK to stall worsening myopia in children, so it would be an off-label use, or a use other than what the procedure is approved for.

The most likely risk with using these lenses is an eye infection, explains Dr. Jeffrey J. Walline, associate dean for research at Ohio State University. Infections are more likely when people sleep in their contact lenses, although these are breathable contacts approved for overnight wear.

According to the Centers for Disease Control and Prevention, sleeping in any type of contact lenses increases the risk for related eye infections [six-fold to eight-fold](#).

Lee's children have not had infections, and Kolzow says the same. Most eye infections cause no great harm, but it is possible a patient could lose their eyesight, cautioned Steinemann.

In addition, the treatment can be costly, more so than glasses or contacts.

Steinemann said it is important for doctors to know all the risks with OrthoK and how to communicate them to parents before making recommendations.

Myopia on the rise

The proportion of myopic (nearsighted) people is on the rise. A 2016 [World Health Organization](#) report estimated that 22.9% of the global population has myopia and 2.7% have high myopia, a more severe version of vision impairment; by 2050, those numbers are estimated to rise to 49.8% and 9.8%, respectively.

"Based on a study published in 2009, experts at [the National Institutes of Health] estimate that at least 41 percent of Americans are nearsighted," notes the National Eye Institute's website. According to researchers, nearly 25% of Americans suffered from myopia in the early 1970s, so a [66.4% higher prevalence](#) of myopia occurred over a 30-year period.

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...ent among school-aged children living in urban areas in some Asian countries," said Kathryn Demott, a spokeswoman for the eye institute.

Specially designed contact lenses worn while you sleep flatten the curvature of the cornea, the front outer surface of the eye. This changes how light passes through the eye and allows short-sighted people to [see clearly](#) throughout the day without wearing either glasses or contact lenses.

Despite possible risks, many parents are turning to orthokeratology to slow the decline of vision in children with mild to moderate nearsightedness.

OrthoK, which has been around since the mid-1960s, is not a one-time treatment. Every night or every other night, patients must wear the contact lenses to maintain good vision during the daytime hours.

"You wake up in the morning, take 'em out, and you're good to go for the day," said Tom Kolzow, a 23-year-old broker working in Chicago. His eyesight is better now than when he started at 16, he says. "I'm not trying to exaggerate that.

"Since myopia is highest in persons of Asian ancestry and this demographic group has become more prevalent in the US over the past decade, it is conceivable that rates of myopia in the US might be on the increase because of the changing demographics in the US," Demott said, cautioning that national data do not specifically address the point.

"It seems to be increasing too fast to be explained by genetics," Walline said.



"Nobody really knows why the prevalence of myopia is on the rise," he said. Still, most doctors have an opinion.

Staring at screens

"The kids today are doing so much close work, it's so unhealthy," said Dr. Cary Herzberg, president of the American Academy of Orthokeratology and Myopia Control. By comparison, during the Industrial Revolution, when most people were still predominantly using their eyes for distance seeing, the incidence of myopia was less than 5%, according to the academy.

As Herzberg explains, staring too long at cell phones, handheld electronic games or any small screen does not properly exercise the eye. All of us -- but especially children with growing eyes -- need to lift our heads, look around and

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01:10

adjust our focus on distant scenes. Bringing far objects into focus is the way our eyes flex their muscles and stay strong.

"The myopia problem is a big health risk," Herzberg said, adding that myopia can be a primary cause of glaucoma. Nearsightedness does not immediately cause this eye disease, which damages the optic nerve. Instead, glaucoma can evolve from myopia over time. Similarly, short-sightedness may lead to cataracts, macular degeneration, retinal detachment and other vision difficulties as a person ages.

Instead of staring at screens, Herzberg explains, children should be [outside](#), naturally exercising their distance vision, or playing sports, since both of these activities seem to slow nearsightedness.

"Even getting kids to play for 40 minutes a day might slow down the progression," Steinemann said. Recent studies also suggest [sunlight](#) itself helps the developing eyes of children grow normally, which is necessary to avoid vision problems.

These natural methods, though, may not be the answer for all children.

Another alternative for treating myopia

Other doctors feel that the risks of OrthoK are small enough to justify endorsement. "It is a great treatment, especially for children who swim, because they never wear their contact lenses in the swimming pool," Walline said. He adds that parents also like it because children wear the contact lenses while at home and never at school or outside the house.

Various [small-scale studies](#) indicate that OrthoK not only temporarily improves vision, it slows the progression of

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[A review of studies](#) found that the progression of nearsightedness slowed by up to 66% in children who regularly wear of the lenses over a period of three years.

Although these results are impressive, the evidence is still insufficient for the FDA to support using OrthoK to stop



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eye drops.

Comparison of two treatments

Atropine drops are commonly used in eye exams to dilate the pupils to allow a doctor a better view of the eye, but in recent years, they have become a (literal) solution to the problem of myopia progression. When used in less-concentrated formulas, they do not create such a strong dilation effect but relax the eye's focusing mechanism. This, scientists believe, helps stall nearsightedness. In Taiwan, the drops have become [popular](#) for children with vision problems.

"Not sure how popular it is in the US, but lots of studies are being done especially for younger kids or in other situations where orthokeratology may not be suitable," said Elissa Campbell, an Australian optometrist. For example, a [2016 study](#) found that low-concentration atropine eye drops used by 56 children over the course of just one year effectively retarded the progression of their myopia.

Though such results may be good, Campbell explains atropine is not quite as good as OrthoK in preventing a child's eyesight from worsening. A [2014 comparison study](#) of OrthoK and atropine in 210 patients over a three-year period supports her view. The two treatments produced comparable results, though the lenses did a slightly better job of retarding myopia. In a similar experiment lasting two years, children wearing OrthoK lenses experienced about half the myopic progression as those who received no treatment, the researchers reported.

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worsening eyesight in children, notes Steinemann. Clearly, though, some doctors disagree and believe the treatment helps kids when they need it most. A myopia treatment is no longer necessary in adulthood, because most people's vision stops getting worse once they reach their mid-20s.

OrthoK fittings have risen dramatically, says Herzberg. The International Academy of Orthokeratology and Myopia Control has seen an increase of more than 10 times in members over the past five years, he said, while the American Academy of Orthokeratology and Myopia Control has doubled in membership during the same time period. This is due, in part, to a growing popularity among parents.

One other method to stop a child's eyesight from growing worse has also gained the backing of doctors and parents despite the fact that the FDA has not sanctioned it: atropine

These studies may be interesting, but they "involve very small cohorts of children with very limited follow-up," said Steinemann, and there's simply not enough scientific research, good or bad, about using either OrthoK or atropine for delaying nearsighted progression in children.

"We don't understand the progression of myopia in children very well," Steinemann said.



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