

## Covid 19 Pandemic and Persist behaviour of Less Outdoor Exposure, More Indoor & Near work & Screentime Worsening Misery of Myopia in Kids!

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Submitted: 19 Oct 2023

Accepted: 08 Nov 2023

Published: 13 Nov 2023

Citation: Suresh Kishanrao (2023). Covid 19 Pandemic and Persist behaviour of Less Outdoor Exposure, More Indoor & Near work & Screentime Worsening Misery of Myopia in Kids!, J of Optha, Opto & Optics 1(1).01-08.

### Abstract

Myopia is a condition where affected person can clearly see object or written alphabets or words in close distance, but the same object or alphabet or a sentence is seen from a distance blurred. Normally, all are far-sighted after birth and in the first years of life, the eye grows until the focus is located on the retina resulting in normal vision. Once this condition reaches, the eye should stop growing, but in some children the eye continues to grow, resulting near-sightedness. The most common form of near-sightedness develops when children start School as they are still a little far-sighted or have normal vision, that progresses in following years of their life. Pathophysiology of Myopia is due to the light rays from far off objects focus in front of the retina instead of on the retina. Once near-sightedness reaches -6.00 dioptres or the eye length reaches or exceeds 26 mm, it is called extremely near-sighted or extreme Myopia.

Myopia not only hinders children in their daily activities but also worsens year on year and result in complications. Factor like family history, changes in lifestyles like more screentime, less outdoor exposure, more indoors and near work or learning activities like online classes and entertainment are associated with Myopia. With the advent of Television and Mobile phones for entertainment and transactions more exposure to screen became common in the last decade. Covid 19 Pandemic added to the screen time due to online classes during 2020-2022, and children suffered the worst as we are seeing Myopia among under 5 children. If not managed early Myopia may lead to complications like retinal detachment, Choroidal neovascularization, retinoschisis, glaucoma, cataract etc.

Diagnosis of Myopia has also become more sophisticated in the last two decades, transiting from use of Snellen's chart for testing and correcting the refractive error with different corrective lenses to use. Last two decades have seen development of "optical coherence tomography (OCT)", that redefined Myopia Management. Traditionally Myopia is diagnosed during a general eye exam by i) Visual acuity test to measure vision at distances using Snellen's chart and ii) Refraction test to determine the correct prescription for glasses iii) Slit-lamp exam to assess the structures of the eyes. Modern method of OCT utilizes interferometry, a concept to create a cross-sectional map of the retina that is accurate within 10-15 microns. The eye glass was invented during the 13th century, for high Myopia Lasik or laser eye surgery is recommended.

### Materials and Methods

This article is an outcome of follow-up of 3 cases of Myopia being diagnosed and managed in July - Augst 2022 and comparing with diagnosis and management of My own, My spouses and my 2 sons Myopia management in 1961, 1990, 2002 and 2016 respectively.

**Key Words:** Refractive errors, Myopia, Hyperopia, Astigmatism, Axis, Dioptre, near-sight, retinal detachment,

### Introduction:

Vision or to be specific visual acuity determines nearly 85% of learning by seeing in early childhood. Starting from recognizing parents, grandparents or visitors and responding with a welcome smile or distressed cry develops based on the visual acuity. As they grow, toddlers kicking a ball, riding a bicycle, picking up a bowl or a toy, recognizing the colours are dependent on their acuity of vision. But for all this to happen the children must be able to see clearly, benefit from learning, have fun, and make mischief and small discoveries and give joy to parent's children must have clear vision. Myopia is a condition where affected child can clearly see an object or written alphabets or words, time in wall clocks in close distance, but the same item when seen from a distance becomes blurred. The most common symptoms include difficulty in seeing distant objects, child moving closer to the object like time piece to see, complaints of headache & eye ache. Myopia is a common refractive error. It is also an important cause of ocular morbidity especially in younger generations like school-going children and young adults [1] It has become a major public health problem globally, with a prediction of up to 50% of the world population to be myopic by 2050 [2]. Myopia is also the most common clinical condition seen in clinical practice. The concept of myopia originated with Aristotle (350 BC), who used for the first time the as he linked between bulging eyes, frequent blinking, squeezing of the eyelids, close reading and micrography. He thought that Near-sightedness results from the eye being too long or oval-shaped rather than round or due to the curve of the cornea being too steep, resulting in light rays coming to a point in front of the retina and crossing [1,2]. Factors like family history, changes in lifestyles like less outdoor exposure, more of screentime, indoors and near work or learning activities like online classes and entertainment are associated with Myopia. In the recent decades in developing countries and probably 2 decades in developed countries, the first attraction to the children is comics, figures and games on TV screen and a bit more recently mobile phone. Parents handing over their mobile phones to the young kids to keep them engaged while they are busy working, talking, cooking, worse even enticing them for feeding, or stop crying has become a common practice among working parents for want of time and need for multi-tasking these days.

Myopia happens because the child's eye lenses have a refractive power which is too high and/or the overall eye-length is too long. In both cases, the focus is in front of the retina, creating

a blurred image. Normally, children are far-sighted after birth. In the first years of life, the eye grows until the focus is located on the retina resulting in normal vision. Once this condition has been reached, the eye should stop growing. If the eye continues to grow, however, near-sightedness develops. The most common form of near-sightedness develops when children start School (school myopia). While children are still a little far-sighted or have normal vision when they start school, they develop near-sightedness during the following years of their life. Once near-sightedness reaches -6.00 dioptres or the eye length reaches or exceeds 26 mm, it is termed "extreme Myopia".

To document the process, the length of the eye must be measured at regular intervals, as there is a significant increase in the risk of eye diseases and there is a possibility of identifying the most significant changes to the eye a year before the onset of Myopia. Most common disease caused by progressive near-sightedness is retinal detachment. If left untreated, this leads to blindness. Due to the growth of the eye length, the pulling forces on the retina increase more and more, eventually causing it to detach from the choroid. Even with a near-sightedness of -3.00 dioptres, the danger of a retinal detachment increases 10-fold. From -6.00 dioptres, it even increases 16-fold. Other secondary diseases of progressive short-sightedness include Choroidal neovascularization, retinoschisis (gap formation in the centre of the retina), staphyloma (local sagging of the posterior eye), glaucoma (death of the optic nerve fibres), cataract (hazing of the eye lens). Myopia usually starts in school age and worsens until adulthood [1]. Myopia gets stabilized by early 20s, and some people confuse this with improvement as they age, but the reason is halting of the eye's growth. Students who sit in the front rows in their school classes may not even recognise the problem for long as was in my case.

Last decade has seen the development of Myopia in children at a much younger age. In fact, about 9% of all toddlers are near-sighted. When children develop myopia at a very young age (below 6 years old), it is most concerning because their myopia has been shown to progress faster at younger age, reaching higher levels of myopia by the time they reach adulthood. It was though that High Myopia in children younger than school-age children was though to be less common and was associated the eyes being too large at birth or shortly after, either due to developmental issue at birth or develop afterwards. National School health program indicates that mild myopia increased as the grade level increased from grades 1-6, gradually decreased thereafter from grades 7-9 over 3 years ( $P < 0.001$ ). The prevalence of moderate myopia increased gradually from grades 1-9 over 3 years corre-

sponding to Covid 19 Pandemic [2].

But of late, especially following Covid 19 Pandemic (2020-22) children under 5 years are also being diagnosed with moderate and high Myopia. Exposure to screentime for education and entertainment and low levels of outdoor games and exposure are being blamed for this change [6,7,8].

Myopia not only hinders children in their daily activities but also worsens year on year to result in complications. Therefore, early identification of myopia and managing limiting and slowing down the progress is critical for child's development. Management of myopia has witnessed revolutionary changes for two decades. Corneal topography has made our understanding of cornea more lucid and its contribution to the progression of myopia [2].

The most common treatment for myopia is to wear prescription glasses. Ocular glasses combine two flat images perceived by each eye into one. These stereoscopic images, generated by the computer or the headset, are projected onto two lenses in front of each eye. The surgical evolution with lasers and phakic intraocular lenses has enabled patients with high myopia to see spectacle-free.

Optical coherence tomography (OCT) is a non-contact imaging technique which generates cross-sectional images of tissue with high resolution, making it especially valuable in organs, where traditional microscopic tissue diagnosis by means of biopsy is not available, such as the human eye.

The World Health (WHO) Organization ranks globally, uncorrected refractive errors as one of the top causes of vision impairment worldwide (44%). Global eye health plan was launched in 2014-2019, aiming to secure access to eyecare services across the globe to reduce the incidence of avoidable visual impairment. For children, the estimated pooled prevalence of astigmatism (14.9%) is higher than that of Myopia (11.7%) and hyperopia (4.6%). For adults, the prevalence of astigmatism is higher (40.4%) compared to hyperopia (30.9%), and to myopia (26.5%).

## Case Reports

### Anagha Under % years girl May 2022

Anagha Alok a under 5-year child (4.9 yrs.) was brought to my notice by her mother a niece of mine complaining that she is unable to see distant object clearly. Her mother Lakshmi was

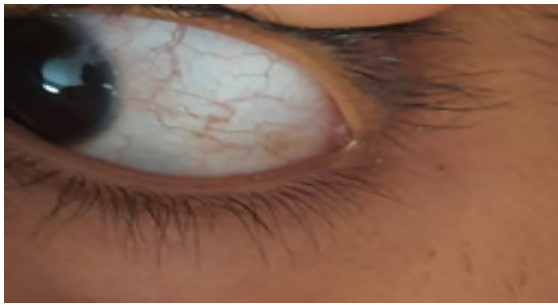
surprised when the girl failed to read the time on the wall clock to go the kindergarten school despite the training and her known ability. To confirm she was asked to go a bit closer when she was able to read the time. As there was family history of Myopia the mother got scared and brought to my notice. A detailed examination by a paediatric Ophthalmologist in one of the best eye hospitals in Bengaluru city it was confirmed that both eyes were myopic. While right eye need correction with -2.5 spherical and -1.75 cylindrical lens the left eye was corrected with -1.5 spherical and -2.5 cylindrical lens to get 6/12 distance vision. She was advising for annual OCT for monitoring the trends. A OCT in May 23 indicated no further deterioration



## Optical Coherence Tomography (OCT) For Risk Assessment

Most importantly the author saw use of an optical coherence tomography (OCT) and an ultra-wide field (UWF) retinal camera for monitoring posterior eye health. OCT was initially developed and commercialized by Zeiss in 1997 with the OCT1. With the introduction of the Stratus (OCT3) in 2002 and the Zeiss Vis ante in 2006, imaging of the anterior segment became widely used and simple to use. Zeiss's newest imaging technologies include the Cirrus 5000 OCTA (OCT angiography). The Oculus Myopia Master is the first all-in-one instrument that performs and combines the necessary measurements for the measurement and follow-up of myopia/myopia. A concave (diverging) lens causes light rays to diverge before they strike the lens of the eye so that the image is formed on the retina. Hence, a concave lens is used to correct myopia. The equipment measured the axial length, keratometry and refraction of the eyeballs and measuring the risk by noting i) Myopic parents, ii) outdoor activity time and iii) near-work activity apart from school or work time. Refractive error is measured in dioptres (D), and myopia is designated with a minus sign. Mild myopia is 0 D to -1.5 D, moderate -1.5 D to -6.0 D, and high myopia -6.0 D or more.

## Yeshas years Boy



Mid July 2022 Yeshas an 8-year-old boy was brought to me with complaints of redness of eyes and mild headache in the school. While mild headache episodes were reported for more than six months often, the redness was notice for the first time. On examinations both eyes were red but left was more explicit than right, due to vascular dilatation and not attributable infection either viral or bacterial, Conjunctivitis common in the season. A paediatric ophthalmologist's consultation identified refractive errors in both eyes. While left eye needed - 2.0 cylindrical and +1.0 spherical correction at axis 1600, the right needed -0.5 cylindrical and +0.5 spherical at 1800 axis. The diagnosis was "Compound Myopic Astigmatism". Apart from prescribing appropriate lenses for constant use he was advised to use 1) Winolap DS eye drops twice a day for 3 months and 2) Lotepred S eyedrops for 4weeks in slowly reducing does i.e., 6th hourly for the first week, reduce to 8th hourly for 2nd week, twice in third week and once in the fourth week. It took about 6 weeks for the boy to get adjusted to the spectacles and now he is fine.



## Aadya Kulkarni 4-Year Girl from Sydney, Australia

In early August 2022 Aditi my niece wanted a second opinion for her daughter Aadya 4-year-old girl (niece's daughter) visiting the family in Mysore, Karnataka from Sydney prescribed eye lenses wondering is something more can be done. Alerted by

Anagha and Yeshas case I advised for a consultation with the same paediatric Ophthalmologist. Test of refraction and use of OCT were similar, though the corrections needed were low Right eye at -1.5 spherical and -0.75 cylindrical lens for the left eye and -0.5 spherical and -0.5 cylindrical lens for the left eye to get 6/12 distance vision. She was also advised for annual OCT to see the trends. OCT done in July 23 in Sydney reported a small progress of refractory errors. Right eye at -1.5 spherical and -1.0 cylindrical lens for the left eye and -1.0 spherical and -0.75 cylindrical lens.

## My Younger Son's Diagnosis 2003 New Delhi

My younger son complained of difficulty in seeing the blackboard when eh was in class ix, traditional eye check-up with a private Ophthalmologist confirmed mild Myopia. Traditionally Myopia was used to be diagnosed during a general eye exam by i) Visual acuity test to measure vision at distances using Snellen's chart and ii) Refraction test to determine the correct prescription for glasses iii) Slit-lamp exam to assess the structures of the eyes. He was prescribed spectacle with corrective lenses for Right eye at -1.0 spherical and -0.5 cylindrical lens for the left eye -0.75 spherical and -0.50 cylindrical lens which has been stables since then, though he does not use constantly as advised. This was probably the last time I had followed up eye testing in children until recently in 2022 to be surprised with the developments of use of OCT.

## My Elder Son's Diagnosis 1996 New Delhi

My elder son was also prescribed after testing in the traditional way as described above when he was in 10th class and uses with very little change in refractive errors.

## My Wife's Diagnosis & Lasik Surgery 1992 New Delhi

My wife was a known Myopic since she was 14 years old. The refractive error was progressing and has reached high myopic level in 1989 when I joined UNICEF in Delhi. This was the first time I opted to get her Lasik corrective surgery and witnessed the procedure first time, by a private Ophthalmologist. Believing the assurance of spectacle- free sight, she was happily managing, until May 2023 when a routine eye check-up revealed the need for corrective lenses -1.0 spherical & -1.0 cylindrical lens and -0.5 spherical & -0.50 cylindrical lenses, for Right and Left eye respectively.

## My Myopia Diagnosis 1961 Kalburgi, Karnataka

Till the age of 16 years, finishing high school (1960) I was a front bench sitter in the class and had not felt any sight problem.



It was only in first year of the college, I had occasions to sit on back benches and found it difficult to see what was written on the blackboard. Then I was formally recognized as having Myopia in February 1961 to me and my parents' surprise. By that time Correction needed was -2.5 dioptres in both eyes, which remains constant until 2015. Being diabetic since 1991, had to undergo early cataract surgeries for left eye in 2015 and Right eye in 2017. After cataract surgery hypermetropic lens (bi-focal) were added in 2017. Fortunately, diabetic retinopathy has not yet set in despite being diabetic for 32 years.

## OCULUS Myopia Master-OCT

### Discussions



The concept of myopia since originated with Aristotle (350 BC), has been diagnosed by using i) Visual acuity test to measure vision at distances using Snellen's chart ii) Refraction test to determine the correct prescription for glasses iii) Slit-lamp exam to assess the structures of the eyes. In the last 3 decades, most dedicated eye hospitals have moved to use of "Optical coherence tomography (OCT)", that redefined Myopia Management to diagnose Myopia. OCT utilizes a concept known as interferometry to create a cross-sectional map of the retina that is accurate to within at least 10-15 microns. OCT was first introduced in 1991 by Huang and colleagues and has found many uses outside of ophthalmology, where it has been used to image certain non-transparent tissues. Based on the principle of low coherence interferometry, OCT uses an infrared light wavelength ranging from 840 nm to 1050 nm [5]. Several technical modifications from the earlier time domain OCT (TD-OCT) to swept source OCT (SS-OCT), have significantly improved the image resolution, reaching up to 3–5  $\mu\text{m}$  [5]. Deeper ocular penetration with higher wavelength SS-OCT allows clinicians to visualize additional details of the choroid, i.e.,

The choriocapillaris, Haller's layer, Sattler's layer, choroidoscleral interface and even the scleral tissue in special

scenarios [5,6]. Features like eye tracking and scanning the same area during follow up help the clinicians to accurately detect the subtle change at the site of pathology. It can detect myopia at an early stage. The values measured are compared with age-related normative data derived from a database of about 25 000 eyes. The growth curve makes it possible to compare the individual measurement with normative data. The earlier an abnormality trend is recognized, the more efficiently it can be counteracted with appropriate treatments. The diagram shows the axial length and refraction (spherical equivalents) of an individual patient's measurement in an easy-to-understand way. The growth curves support the data interpretation. Influencing factors that can stimulate myopia development are documented in the software. A traffic light scale is provided to help visualize critical values. Categorized action recommendations provide a basis for multiple treatment options. The first steps toward success may be achieved through medication or special contact lenses. Special spectacle lenses and further behavioural recommendations can also be selected. After an OCT and traditional check-up.

1. The customer receives a comprehensive, readily understandable report explaining the status quo. The report also presents the selected action recommendations and progression diagrams and information on influencing factors.
2. For Follow-Up Examinations and Trend Analysis, of the effects of axial length growth on refraction with or without the treatment chosen is illustrated in a diagram. Color-coded representations explain a summary of the treatment strategy and the success of treatment to both parents and children.
3. OCULUS Myopia Master combines the most important measurement parameters with other risk factors (ethnicity, myopia in parents, time spent on close work, and outdoor activities) in a specially designed software that makes the detection, treatment, and follow-up of intolerance much easier and more reliable than ever.

Despite the innumerable benefits, high purchase and maintenance cost of OCT systems prevent widespread adoption in poor resource settings and low-income countries and therefore are used in very few super (Ophthalmic) speciality facilities in metropolitan cities in India.

Another recent development of OCT angiography, which uses motion contrast to identify the blood flow in capillaries, has found wide usage to perform qualitative analyses on microaneurysms, macular oedema, macular ischemia, retinal neovascularization

and choroidal neovascular membranes, and quantitative analyses on the capillary density and measurement of chorioretinal lesion size.

While a hospital-based prevalence of childhood in central India in 2013 had indicated an Ametropic (abnormal refractive eye condition including myopia, hyperopia, or astigmatism) in which images fail to focus upon the retina was to the tune of 40.24%. Out of 1230 ametropic children, myopia was found in 41.05% children making myopia's contribution of 16.5 % with male to female ratio 53:47. Most of the children were belonging to urban area (63.61%). Most common age group affected was 7-12 and 13-16 years. In 18.53% of patient's family history was present. General complaints of Headache were most common complaint for hospital visit. Other complaints are included in the chart:

S. No.	Complaints	No. of cases	%
1	Headache	1011	82.19
2	Unable to see blackboard	923	75.04
3	Eye ache	856	69.59
4	Goes close to television	756	61.46
5	Watering	603	49.02
6	Frequent blinking / frequent rubbing of eyes	98	7.96
7	Redness of eyes	98	7.96
8	Change in palpebral aperture	84	6.8
9	Recurrent swelling of lids	56	4.55
10	Deviation of eyes	23	1.86

The impact of Covid 19 pandemic have been extensively studies in all most all countries. All of them infer that increased screen-time for education, entertainment, and lower outdoor activities due to restriction of people getting together have led to worsening situation of Myopia particularly among young children.

A cross-sectional study as part of school eye screening conducted between September and October 2021, reported from the data of 3,850 children, the prevalence refractive errors, myopia in at least one eye and any vision impairment, was found to be 21.51% (n = 828), 19.53% (n = 752), and 12.83% (n = 494), respectively. The average myopic spherical equivalent error was found to be  $-2.17 \pm 1.11$ D. Almost 97% of girls had less than 3 h of outdoor activities. Refractive errors were 7.42 and 2.77 times more,  $P < 0.001$  among children who had outdoor activities less than 3 h per day and sleep less than 7 h per day [6].

In a retrospective study among 20 527 children, multivariable analysis showed that high myopia prevalence was associated with the COVID-19 pandemic (odds ratio [OR]- 1.40;  $P < .001$ ), younger age (OR, 1.84;  $P < .001$ ), male sex (OR, 1.11;  $P = .007$ ), lower family income (OR, 1.05;  $P = .04$ ), and parental myopia (OR, 1.61;  $P < .001$ ). Similar associations were observed in myo-

pic SER and AL changes. Similar findings were observed in myopia prevalence when including time spent outdoors, near-work time, screen time, or dioptr-hours, instead of the COVID-19 pandemic, in the models [7].

Subgroups analysis pointed to the facts that : i) There was significant association between parental myopia on myopia prevalence in children, showing that the less the parental myopia, the greater the influence of the pandemic childhood myopia prevalence (OR, 0.81; 95% CI, 0.72-0.91;  $P < .001$ ) ii) Similarly, there were significant interactions between the pandemic, parental myopia, and family income on SER changes, showing that the less the parental myopia or the lower the family income, the greater the influence of the pandemic on SER changes, ( $\beta$  0.10 [0.02-0.18;  $P = .01$ ] and 0.06 [0.00-0.13;  $P = .04$ ], respectively [7].

A prospective of cross-sectional study using spot photo screenings in 123,538 children among primary and junior school students from 2019 to 2021 in Xuzhou, China, reported that the spherical equivalent refraction of myopia decreased across all grades except grade 1 ( $0.23 \pm 0.56$  D in 2019,  $0.24 \pm 0.63$  D in 2020) from 2019 to 2020. However, refraction exhibited a hyperopic shift in 2021 compared to 2020 for grades 1–5 (no

significant decreased for grade 4). The prevalence of myopia in all grades increased in 2020 compared to 2019, and the most dramatic changes were observed from grades 2–5 and grades 7–8 ( $P < 0.05$ ). The changes in myopia prevalence in grades 1–4 was mild, and the reduction in myopia for Grade 5 is significant from 2020 to 2021. Nevertheless, students in grades 6 and 9 exhibited the greatest growth in myopia prevalence ( $P < 0.01$ ). All grades had higher myopia prevalence in 2021 compared with 2019, except grade 1 ( $P = 0.25$ ). The prevalence of myopia in girls was higher compared with boys, and the urban myopia prevalence was higher than in rural areas over the 3 years except in 2019 ( $P = 0.18$ ) [8].

A retrospective study of 4257 children aged 6–8 years, and 5880 parents were recruited in the Hong Kong Children Eye Study, reported 25.0% were myopic in children, and among them, 12.7% for the 6-year-olds, 24.4% for the 7-year-olds and 36.1% for the 8-year-old. About 0.7% of children aged 8 years were high myopia. In all age groups, boys (their myopia rate: 13.9% at 6 years, 26.7% at 7 years, and 38.3% at 8 years) were more myopic than girls (11.3% at 6 years, 22.0% at 7 years, 33.4% at 8 years). Among parents, 72.2% were myopic (mother, 73.2%; father, 70.7%) and 13.5% high myopia (mother, 12.8%; father, 14.5%). It was observed that prevalence decreased with ages and increased with education level [9].

A systematic search of 223,567 articles from the three databases using the search strategies – (203,186 from ScienceDirect) 19,767 from PubMed, and iii) 614 from Google Scholar} and including selected 1,337 articles reported that that children who spent less time outdoors and sometimes no time at all due to strict home quarantine rules, and significantly increased Screen time during this period, as children used electronic devices for recreation and online learning. It inferred that child used near-viewing devices such as smartphones and tablets more than other electronic devices such as televisions or personal computers. The study discovered that strict home quarantine, reduced time spent outdoors, and increased screen time were associated with myopia progression in children during the pandemic Increased use of mobile phones and tablets was also associated with myopia progression [10].

### Myopia Control in Childre

While there is no proven direct link, research suggests that children who spend more time indoors doing near-focused activities (such as computer work, video games, and reading) have higher rates of myopia than those who spend more time outdoors. Myopia cannot be reversed; the goal of treatment is to keep it from

getting worse.

1. Atropine eye drops: in small amounts for 2 to 3 years, for children slow the progression of myopia and is being Widley prescribed but only for 2-3 months in India. The drops are placed in the eye each night at bedtime. Side effects like redness or itchiness around the eye is common but child gets over it.
2. Peripheral defocus contact lenses: These special (multifocal) contact lenses have different areas of focus. The centre of the lens, or “bull’s-eye,” corrects blurry distance vision, while the outer portions of the lens “defocus” the child’s peripheral vision. Peripheral defocus contact lenses might not work in all cases. Prescribing single vision lenses has been done since identifying the problem by Aristotle in 350 BC. However, single vision glasses correct Myopia but do not arrest progress and the child must change the glasses frequently. Now a days Stellest glasses, which correct Myopia through large single glasses and Highly Aspheric Lenslet Target (HALT) create a volume of non-focus light in front the retina following its shape to slow down the eye elongation and progress of Myopia [5]. As Lasik surgery is advised only after stabilization of refractory error, and this article concentrates on Myopia among young children, it has not been discussed at length.
3. Orthokeratology (Ortho-K): Orthokeratology is a contact lens that a child wears overnight to correct blurry distance vision during the day. The lenses flatten child’s cornea while sleep and the next day, light passing through the reshaped cornea falls precisely on the retina, making distant images appear clearer. Wearing Ortho-K lenses only improves vision for a short time. Once you stop wearing the lenses, the cornea slowly goes back to its normal shape and myopia comes back. Still, ortho-K may provide some permanent reduction in myopia progression.
4. By balancing screen time with outdoor time, helps limit your child’s myopia and protect their vision as they grow older.

### Conclusion

Myopia has emerged as a major public health concern worldwide, especially in East and Southeast Asia.

It is estimated that approximately one-half of the world’s population will become myopic by the year 2050 and that one-tenth will become highly myopic.

Myopia is a major cause of visual disability in children, and children with myopia are predisposed to multiple ocular complica-

tions, thereby increasing the risk of irreversible vision loss later in life. Many studies have implicated strict home quarantine, reduced time spent outdoors, and increased screen time (mobile phones and tablets) for myopia progression in children during the pandemic.

Many observations and a few studies indicate that such behaviour changes continue to persist even after the pandemic and will be adding risk factors. Educating children and parents on these risk factors and ways to tackle them by reducing screen time, taking frequent breaks while using electronic gadgets, using lubricant eye drops to reduce dry eyes, and encouraging to spend more time outdoors will help prevent further myopia progression.

Despite WHO's Global eye health plan of 2014-19 requisite eye care services for children are still not available and all countries must aim to secure access to eyecare services across the globe to reduce the incidence of avoidable visual impairment.

The practice of measuring the trends of growth of eyeballs and follow-up of myopia, in under five children for timely intervention (if need be) must be made available in all Ophthalmic units of the district hospitals in India other developing countries to achieve the UHC goal by 2030. The Countries need to call for actions by parents, kindergarten, and schools.

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