The Myopia white paper

Endorsements

Associations have endorsed the Myopia white paper as it is a very important make people aware of safety of eyes

Key recommendations

Page no 4 gives key recommendations and summary in one sheet, that needs to be followed by all schools

Details

Page 5 onwards all cover the prevalence, causes and plan of actions in schools for myopia

An increasing prevalence of myopia brought together experts from Optometry to consolidate evidence based approaches towards Myopia management. This document proposes precise recommendations for the various stakeholders in the school education to follow towards myopia control.

Myopia task force and contributors to this document

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IMPLEMENTATION AND ADVOCACY TASK FORCE

As health is state subject, a second task force has been formulated to oversee advocacy at state level and to liaise with state governments. All the state and national associations and organisations that endorsed this document, will contribute towards this task. Each organisation will be represented by one individual in the Implementation & Advocacy task force. The organisation name and details of individuals are as follows

Sr. No.	Association Name	Representative name
1	Optometry Council of India	Optom Prema Chande
2	Association of Schools & Colleges of Optometry	Optom Ramachandra V. Shet
3	Indian Optometry Federation (IOF)	Optom Sanjay Mishra
4	Aumni of LVPEI Optometrists	Optom Vijay Yealgondula
5	Elite School of Optometry Alumni Association	Optom Salai Dhavamathi
6	Indian Optometrists Association Kerala	Optom Arya Das
7	Indore Divisional Optometry Welfare Association	Optom Hemant Ratnaparkhi
8	India Vision Institute	Optom Abhishek Kalbarga
9	Karnataka Optometry Association (KOA)	Optom Raghu LR
10	Lotus Optometry Alumni Association	Optom Viswa Gogri
11	Maha Optometry Association	Optom Md. Oliullah Abdal
12	Optomeric Association of India	Optom Ranjan Munsi
13	Optometry Association of Tamil Nanbargal (OATN)	Dr Dharani Rammurthy
14	Ophthalmic Association Delhi	Optom Naresh Ahuja
15	Punjab Ophthalmic Officer's Association	Optom Harjeet Singh
16	State Optometric Association (UP)	Optom Gaurav Dubey
17	West Bengal Association of Optometrists	Optom Srijita Sarkar
18	Vision 2020 India	Dr. Ankita Priyadarshi
19	Optometry Association Haryana	Optom Rajbir Berwal

Endorsements

Optometric associations, educational institutions and vision scientists from across the country have endorsed the Myopia white paper valuing the need for coming together in myopia management

Optometry Council of India

Association of Schools and Colleges of Optometry

Indian Optometry Federation

Alumni of L V Prasad Eye Institute Optometrists

Elite School of Optometry Alumni Association

Indian Optometrists Association

Indore Divisional Optometrist Welfare Association

India Vision Institute

Jabalpur Divisional Optometrist Welfare Association

Karnataka Optometrist Association

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Maha Optometry Association

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Optometry Association of Tamil Nanbargal

Ophthalmic Association Delhi

D O W F Uttarakhand

Punjab Ophthalmic Officer's Association

State Optometric Association UP

West Bengal Association for Optometrists

Vision 2020

Asia Optometric Congress

Orbis, International

KEY RECOMMENDATIONS:

1. A compulsory 60 min break outdoor in all schools in India. This will help increasing exposure to sunlight.
2. In case of online education, 15 min breaks to be taken between sessions.
3. Reduce assignments and near work for pre school children and learning needs to be more activity based.
4. Awareness at parent and teacher level regards myopia and ill effects of myopia
5. Regular eye screening for school children

EXECUTIVE SUMMARY:

INTRODUCTION -

The prevalence of myopia is increasing globally at an alarming rate, where WHO has predicted that by 2050, half the world population will be myopic and will need to wear spectacles for good vision. This not only will affect the health of the eye but will also have an economic impact on the country, as more and more people will need vision correction, without which their productivity will be affected.

There has been scientific evidence to prove that exposure to the sun reduces the incidence of myopia and helps in myopia control. This factor is more significant now as we deal with the pandemic and all education is happening online. Increased near work also is a factor that contributes to increase in myopia. In view of all the above factors, optometrists came together, discussed evidence, publications and research and have drafted recommendations to the Government of India regards few changes in school educational policies. These are aimed at reducing the progression of myopia.

SUMMARY –

Key optometrists discussed and deliberated on evidence regards sunlight and myopia available internationally. They also reviewed the incidence of myopia and pathology associated with high myopia in India. Recommendations based on the evidences are reported.

Myopia is a major public health concern of the 21st century

Document for the government to initiate public health policies in India for myopia prevention

By
The Myopia task force

Myopia (also known as short-sightedness) is the most common ocular condition in children and young adults in India and worldwide. It is estimated that about 2.5 billion people are affected by myopia worldwide by the year 2020 and peak to nearly 5 billion by the year 2050.[1] With the worldwide increase in the prevalence of myopia in the last few decades and being associated with sight threatening ocular diseases in later life, myopia is being seen as a major public health concern of 21st century. The development of myopia is generally irreversible in most of the cases due to excessive stretching of the outer coats of the eye.[2, 3]It's impact on individuals and society is enormous, including direct costs such as spectacles, contact lenses, refractive surgery, and indirect costs such as vision loss due to the associated ocular complications in individuals with spectacle prescription – 6.00D or worse.[4-6] Although, East Asian regions are most affected by myopia with the prevalence rates as high as 80-90% in teenagers,[7] the prevalence of myopia in India is also gradually increasing (increased from 5% in rural to about 35% in urban school children in 2 decades).[8],[9]. Another study depicted prevalence of myopia estimated at 15% among urban children aged 11-15 years, and an increase in rural prevalence from 4.6% to 6.8%.[10]A recent work involving the data from patients who visited the tertiary eye care centres of L V Prasad Eye Institute in India, indicated that 4.3% of the Indian myopes had some kind of pathologic myopia lesion which is similar to what is reported in East Asian countries.[11, 12] Another school eye health based study by SankaraNethralaya, Chennai, India aimed at understanding Myopia prevalence, and risk factors estimated the prevalence of mild to moderate Myopia to be 15% and high myopia greater than 6 D to be 1% among school children aged 5-15 years (manuscript under review).

Myopia is a major public health concern of the 21st century

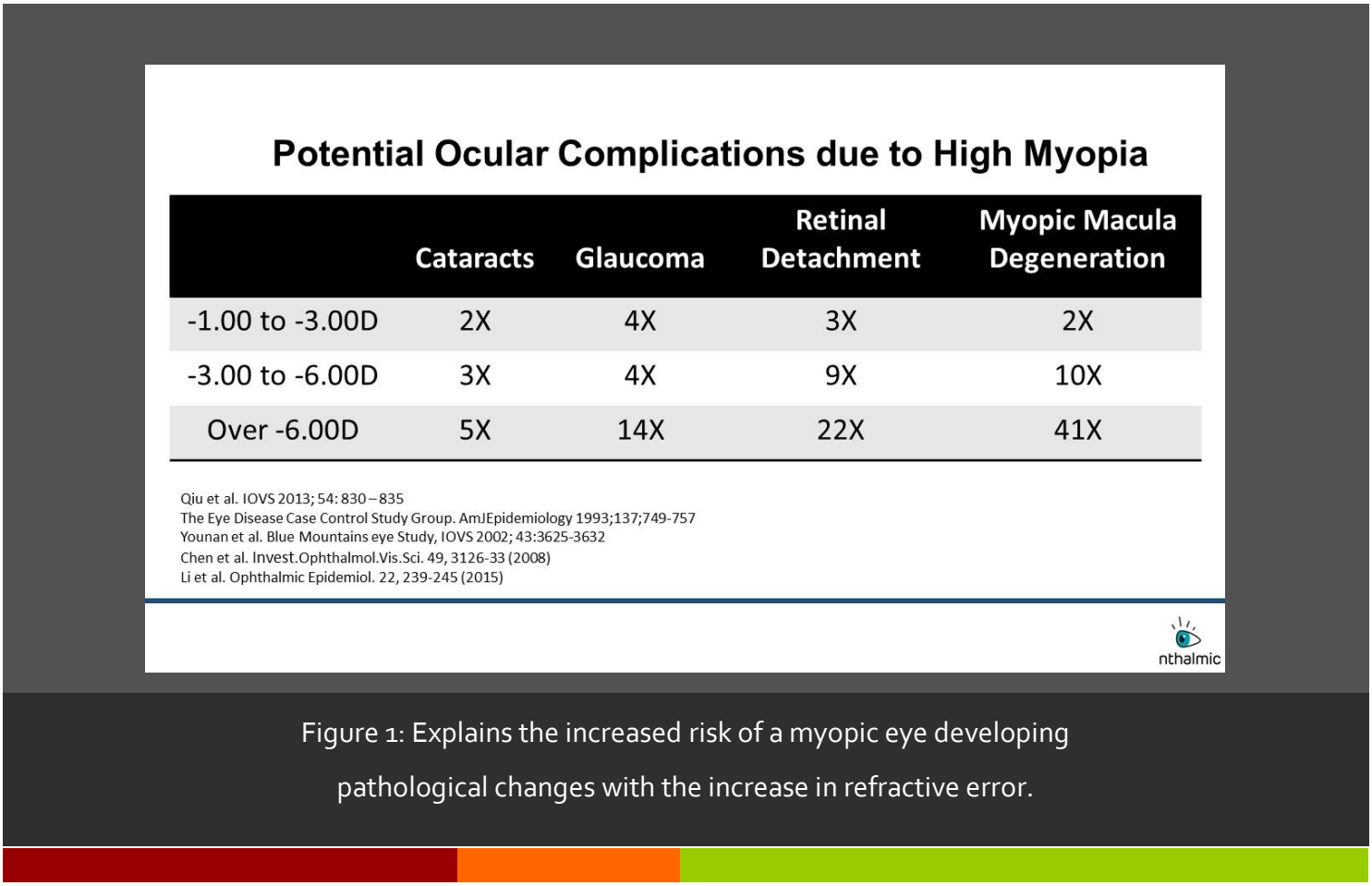


Figure 1: Explains the increased risk of a myopic eye developing pathological changes with the increase in refractive error.

WHY MYOPIA OCCURS AND HOW TO PREVENT THIS PROBLEM -

Although there are multiple reasons for why a child can have myopia, the risk factors for myopia can be broadly classified into genetics and the environmental factors. While many research groups are investigating the cause for myopia onset and its progression since decades,[13] recent research has shown associations between time spent outdoors and myopia, suggesting that spending more time outdoors as an important modifiable risk factor for myopia.[14-17] In a study conducted amongst 6-7 years old children of Chinese ethnicity, it was reported that the higher prevalence of myopia in Singapore was associated with less time spent outdoors compared to those living in Sydney (29.1% prevalence - 3 hours/week in Singapore vs. 3.3% prevalence - 13.75 hours/week in Sydney). A recent retrospective analysis conducted at L V Prasad Eye institute showed the average rate of myopia progression in Indian children to be -0.50 D/year which is comparable with the progression rate of Chinese children, and 17% of these children have tendency to progress by >-1.00 D/year. [18]The education system in India has transformed a lot in the last few decades from traditional outdoor education system to the modern world corporate schools where students are delivered education with modern technology support such as projectors, tablets and laptops. The combination of rapid development in digital technology (use for entertainment, playing games to learning) and the indoor-centric lifestyle such as intense near work to strive for academic excellence and limited time in outdoor environment may result in an epidemic of high myopia in India similar to what happened in China or Singapore few decades ago. During the COVID-19 pandemic, children are spending more time in front of computer screen and this combination of

(Continued)

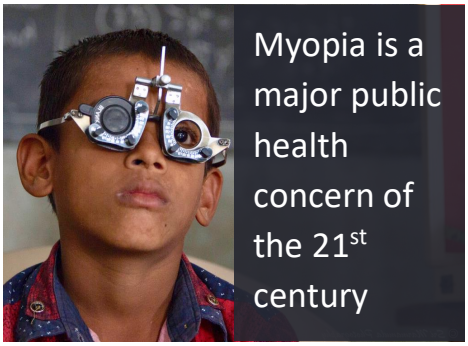
more screen time and less outdoor time may actually put them at higher risk of developing myopia. The World Health Organization recommends that children under 5 spend one hour or less per day on digital devices, and children under 1 spend no time on digital devices. [19]

WHY SPENDING TIME OUTDOORS CAN PREVENT MYOPIA -

There are a number of possible other mechanisms by which outdoor activity could protect against the development of myopia with the hypotheses related to relaxed accommodation mechanism of lens in the eye, uniform dioptric visual field, decreased pupil size due to high illumination thereby increasing the depth of focus and reducing the blur, UV exposure, and exposure to specific spectral composition.[20,21]Outdoor exposure is also known to provide very high ambient light which triggers the release of retinal dopamine, a light-sensitive neuro-transmitter which is known to prevent myopia in different animal models.[22-26]Singapore initiated 'Kids for Nature' program in collaboration with National parks, to educate primary school children and their parents on ways to spend time with nature by doing various outdoor activities. In China and Taiwan, the incidence of myopia in children who were given extra 40-80 minutes of outdoor times during school hours was less compared to the control group.[27] It was also shown that most classroom environments are not equipped with adequate lighting with almost 62% of classrooms having poor illumination. This in turn increases the visual demand for children and points out to the need for optimal lighting and seating arrangements. [28]

WHAT PUBLIC HEALTH POLICIES ARE REQUIRED TO PREVENT MYOPIA -

The increasing myopia prevalence in the current generation of school aged children in the urban regions of India indicate high risk for reaching a myopic and high myopic population by 2050, if the necessary public health policies are not implemented immediately. Given the potential role of spending more time in outdoor environment in myopia prevention, India needs to develop public health policies to encourage children to increase time spent outdoors to counteract the increasing myopia prevalence. Much like the initiatives taken by governments in East Asian countries like China, Taiwan and Singapore to decrease the incidence and progression of myopia,[29] it is high time that such myopia prevention initiatives are taken in India too.While the policy makers at the state and central government levels are majorly responsible for this, equally responsible are the stakeholders at the ground level such as principals, teachers, parents and children to work together to stop this future epidemic in India. Here are some of the policies that government can implement to prevent myopia onset and progression in India



The following recommendations are in line with the WHO white paper on Myopia. The following activities should be mandatory for schools and the registration and licensing of schools should consider these as essential criteria

1. Supervised one hour (60 min.) of recess time in all schools during the school hours every day, right from the primary school level. Introduce outdoor supervised sports, physical training or yoga exercises for one hour each day. Every class should have an earmarked period in the school calendar for this activity. This not only helps in myopia control, but also in reducing childhood obesity and sunlight will increase vitamin D production in children.
2. Schools should have enough space for playgrounds which are regularly used by the children. A ratio of playground area per 100 students should be worked out and followed.
3. Recommend annual examination for school children using a standard protocol.
4. Government and non government schools are recommended to have a MOU with local Optometrists/Ophthalmologists to conduct annual eye examination as per standard protocol.
5. Teachers and parents of school children to be made aware of visual hygiene habits such as regular breaks during continuous near work, reading at 18-24 inches, following 20-20-20 rule, frequent blinking, ensuring optimal lighting, good posture, and using larger screens in digital devices.
6. Advice for new/upcoming schools for constructing classrooms and schools with more windows such that all the classrooms are well lit and receives some natural light.
7. Create public awareness among the parents about the importance of outdoor time via different media (issue in public interest).
8. Recommend community centers in each locality to organize outdoor programs at least twice in a month on weekends.
9. Preschool children need to be more engaged in activity-based learning rather than books or gadget based as this reduces the time spent in close work.
10. Recommend a compulsory no-gadget break for 15 minutes after an hour of continuous lecture, especially if it's online class.
11. If both parents are myopic, there is a higher risk of the child developing myopia. Teachers can be educated on such risk factors and can recommend eye examination of the child to the parent.
12. Involving teachers as key stakeholders in the process by educating and enhancing awareness among them through awareness materials. Schools can also be provided with these awareness materials to be displayed on a regular basis.

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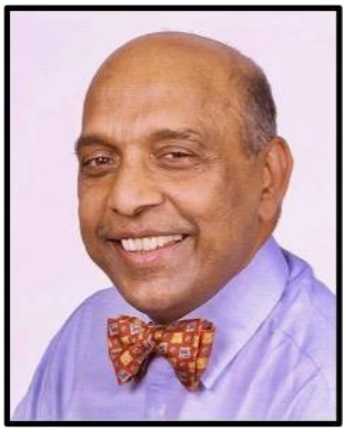
Testimonials

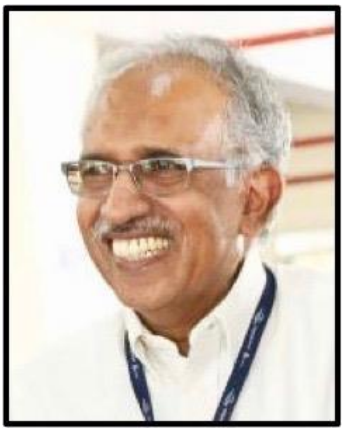


Dr. Gullapalli Nageshwar Rao

Chairman, LV Prasad Eye Institute

"Myopia is considered to be a major impending epidemic that will affect a major proportion of the population. Asrecommended in this white paper, simple preventive measures, in school children, such as mandatory 60 minute break in the middle of the day for outdoor activities and 15 minute break in between sessions during online sessions will go a long way in reducing this risk. These are cost effective measures and I would urge the governments to introduce these in all our schools across the country. This will have salutary effect on the future prevalence of blindness in our country. "

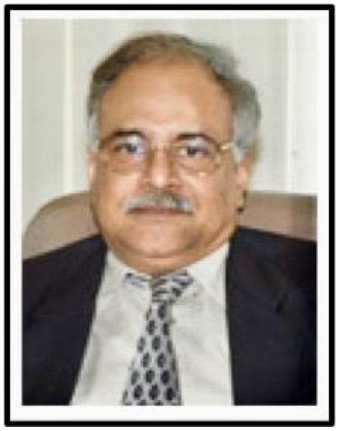
"This myopia white paper highlights the need for urgent action by the governments and civil society, to ensure healthy eyes in children. The recommended simple steps like scheduled daily outdoor activities and regular eye examination for school children, is all it takes".



DrThulasirajRavilla

Aravind Eye Care Systems

Testimonials



DrT.S. Surendran

SankaraNethralaya

" The lockdown has led to an increase in screen time and its influence on the wellbeing of users is a concern to health care practitioners. Quarantine myopia is one of these health concerns. This myopia white paper couldn't have come at a better time highlighting the need to slow myopia progression in children"