

Guidelines for myopia management

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Chair, Legislation, Regulation and Standards Committee
World Council of Optometry

World Council of Optometry

- The World Council of Optometry (WCO) is an international membership-based non-profit organization for individual optometrists, industry professionals and optometric organizations.
- Our **vision** is of a world where optometry makes high quality eye health and vision care accessible to all people.
- Our **mission** is to facilitate the development of optometry around the world and support optometrists in promoting eye health and vision care as a human right through advocacy, education, policy development and humanitarian outreach.

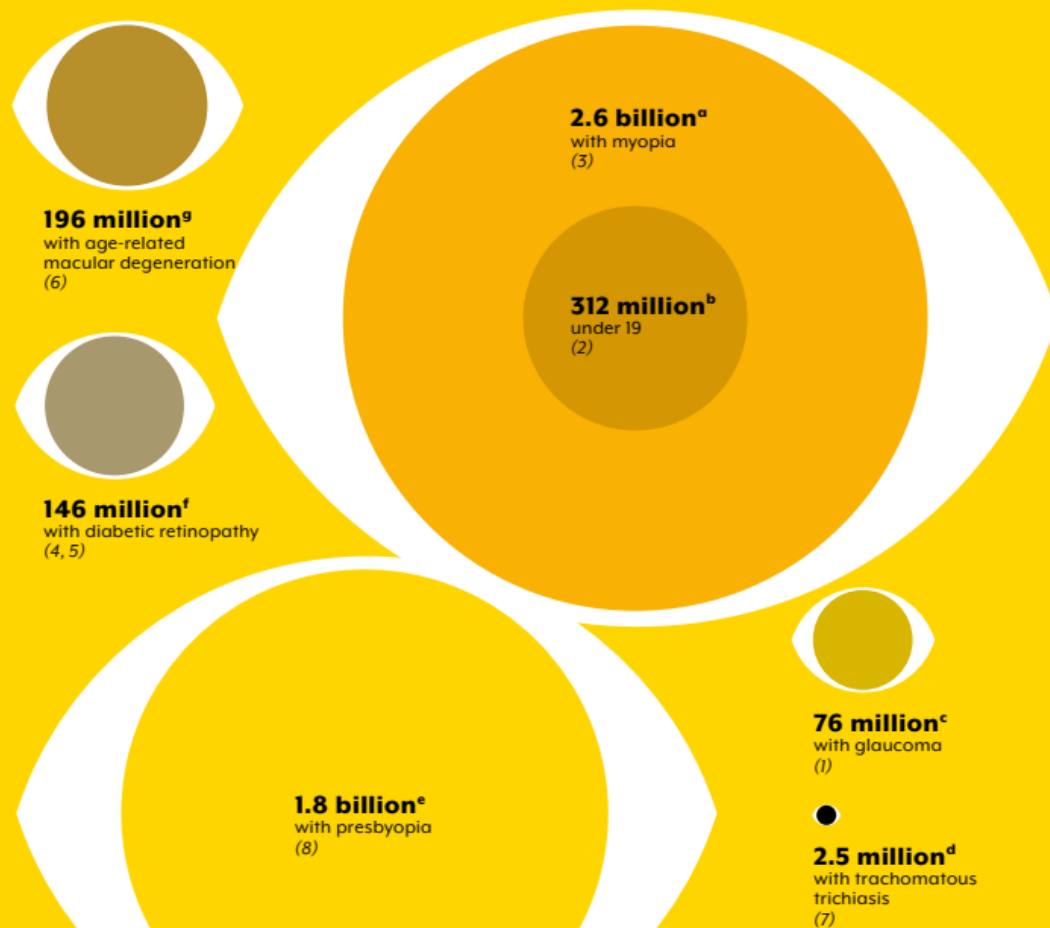
World Report on Vision

- Global need for eye care is projected to increase dramatically in coming decades
- WRV seeks to stimulate action by proposing integrated people centred eyecare (IPEC)
- SDG3: 'Ensure healthy lives and promote well being for all ages'

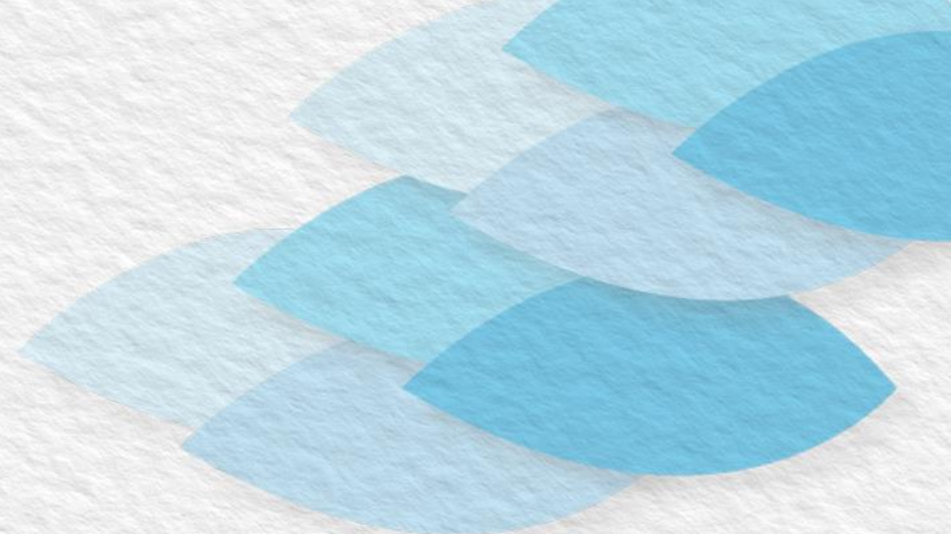
World report on vision



Figure 2.1 Global estimates of numbers of people affected by selected eye conditions that can cause vision impairment



- a 2.6 billion (uncertainty interval, 1.97–3.43) people of all ages with myopia in 2020
- b 312 million (95% CrI, 265 million to 369 million) aged under 19 years with myopia in 2015
- c 76 million (95% credible intervals (CrI), 51.9–111.7) people (40 to 80 years of age) with glaucoma in 2020
- d 2.5 million people of all ages with trachomatous trichiasis in 2019
- e 1.8 billion (confidence interval [CI], 1.7–2.0) people of all ages with presbyopia in 2015
- f 146 million adults with diabetic retinopathy was calculated by applying the global prevalence of any diabetic retinopathy (34.6%) reported by Yau et al. (2012) to the estimated global number of adults aged over 18 years of age with diabetes in 2014 (422 million) that was reported in the WHO Global Report on Diabetes, 2016.
- g 195.6 million (95% CrI 140–261) people aged 30 to 97 years with age-related macular degeneration in 2020



Refractive errors



Type of Strategy

Promotive	N/A
Preventive	●
Treatment	●●

Can cause vision impairment: Yes

Prevention: Presbyopia, hypermetropia and astigmatism cannot be prevented. In the case of myopia, on the other hand, increasing children's time spent outdoors and reducing near-work activity might delay the onset and progression of myopia, which reduces the risk of high myopia and its complications (9, 15). There are also a range of optical, pharmacological, behavioural and surgical interventions to delay the onset or slow down the progression of myopia to more advanced forms and severe complications, however further research is required (68).

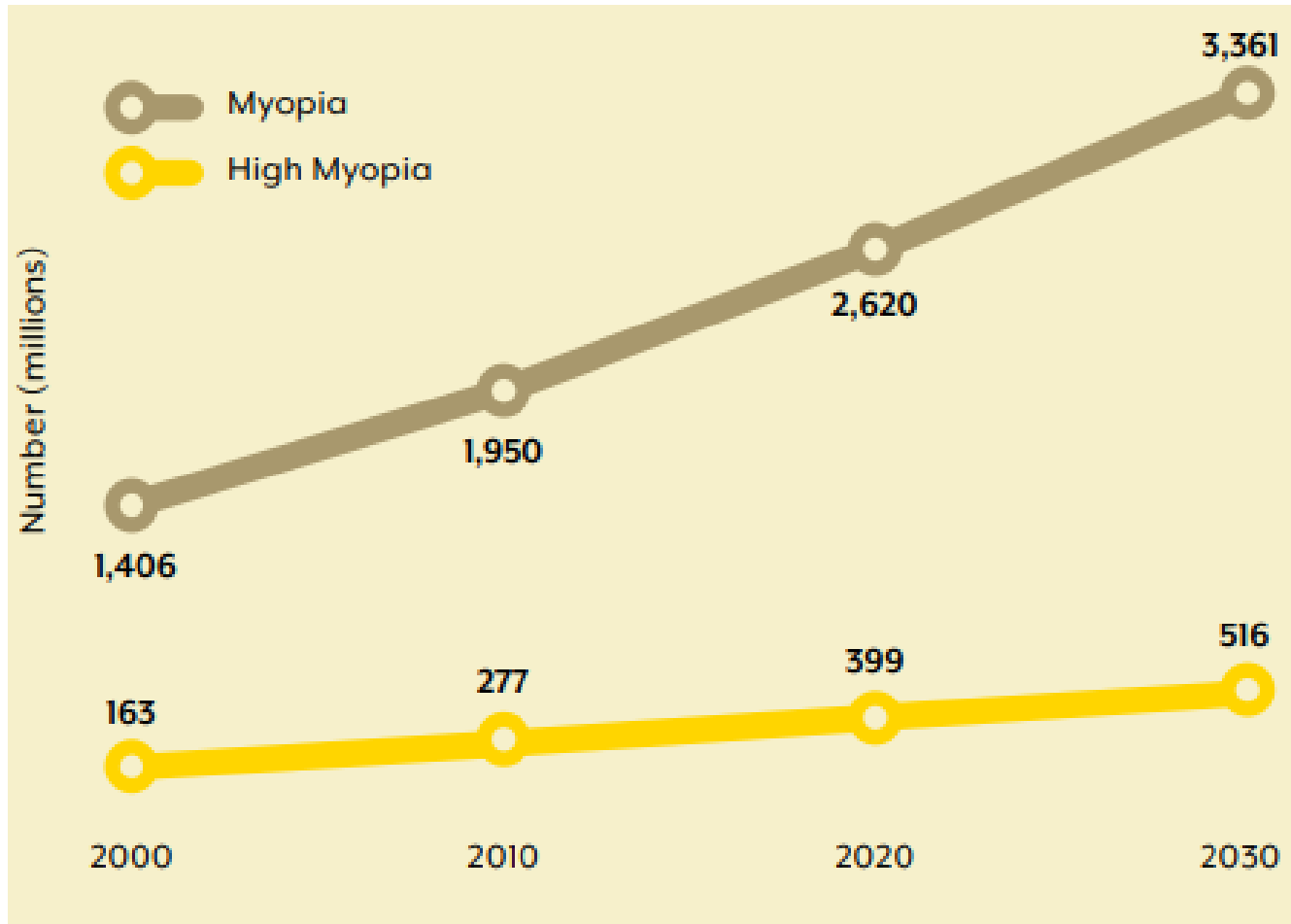
Treatment: Screening for refractive errors is recommended among children (only) in order to avoid the negative impact of uncorrected refractive error on academic performance (12).

Reduced visual acuity from refractive error can be effectively compensated for with spectacles or contact lenses. Laser refractive surgery and, less commonly, intraocular lenses are used to correct the refractive error.

World report on vision



World Health
Organization



Adapted from: Holden BA, Fricke TR, Wilson DA, Jong M, Naidoo KS, Sankaridurg P, et al. Global Prevalence of Myopia and High Myopia and Temporal Trends from 2000 through 2050. *Ophthalmology*. 2016;123(5):1036–42



We know the impact

- Increases in the lifetime risk of further visual impairment
 - Glaucoma
 - Cataract
 - Retinal detachment
 - Myopic maculopathy
 - Myopic optic neuropathy
- Quality of life
- Increased health care expenditure (individual and system)

Myopia and ocular disease

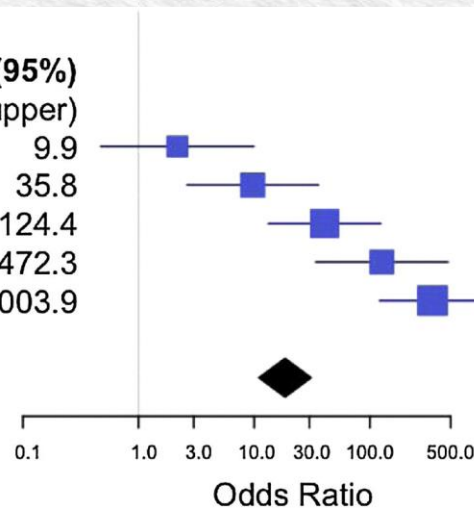
Myopic Maculopathy

Vonghanit et al.

	OR	CI (95%) (lower) (upper)
-1.0 to -2.99D	2.2	0.47 9.9
-3.0 to -4.99D	9.7	2.63 35.8
-5.0 to -6.99D	40.6	13.27 124.4
-7.0 to -8.99D	126.8	34.02 472.3
<=-9.0D	348.6	121.05 1003.9

Any Myopia

18

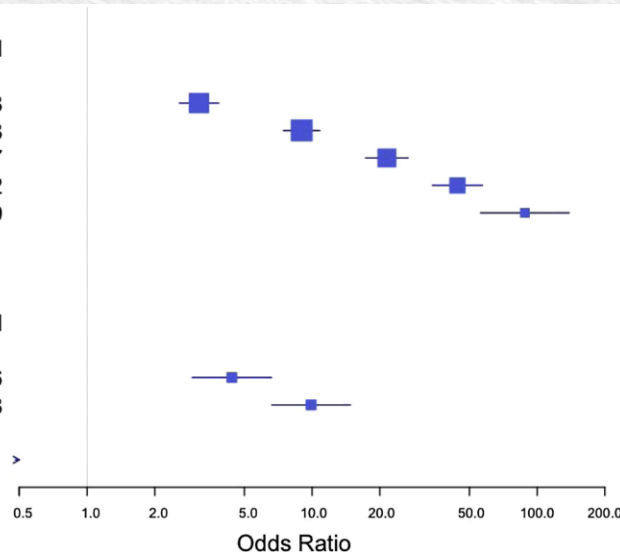


Retinal Detachment Risks
Ogawa & Tanaka

	OR	95% CI
-0.75 to -2.75D	3.1	2.6- 3.8
-3 to -5.75D	9.0	7.5- 10.8
-6 to -8.75D	21.5	17.3- 26.7
-9 to -14.75D	44.2	34.2- 57.2
<= -15.0D	88.2	56.1-138.9

Eye Disease
Control Study

	OR	95% CI
-1 to -2.99D	4.4	2.9- 6.6
-3 to -8D	9.9	6.6-14.8



PSC Cataract
Blue Mountains Eye Study

	OR	95% CI
-1 to -3.5D	2.1	1.4- 3.5
-3.5 to -6D	3.1	1.6- 5.7
< -6D	5.5	2.8-10.9

Glaucoma Risk
Blue Mountains Eye Study

	OR	95% CI
-1 to -3.0D	2.3	1.3-4.1
< -3.0D	3.3	1.7-6.4

Glaucoma Risk
Meta-analysis, Marcus et al.

	OR	95% CI
-1 to -3.0D	1.6	1.3-2.2
< -3.0D	2.5	1.9-3.1

Cardiovascular: Stroke risks
Du et al.

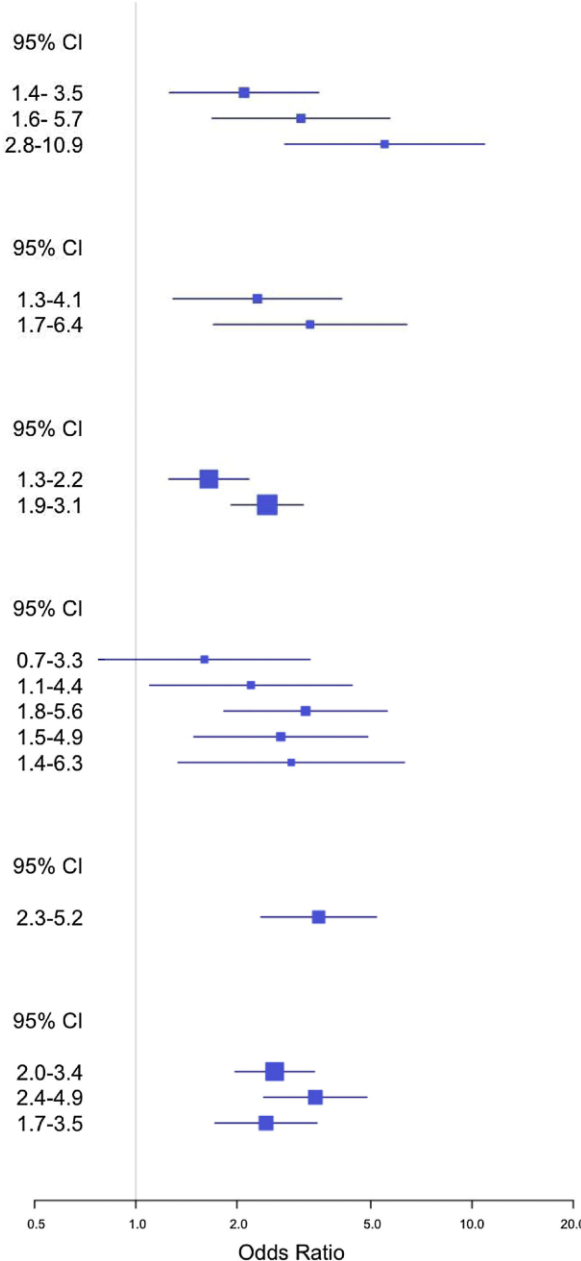
	OR	95% CI
systolic BP 140-149	1.6	0.7-3.3
systolic BP 150-159	2.2	1.1-4.4
systolic BP > 160	3.2	1.8-5.6
<20 cigarettes/day	2.7	1.5-4.9
>20 cigarettes/day	2.9	1.4-6.3

Cardiovascular: Haemorrhagic Stroke
Woo et al.

	OR	95% CI
Untreated Hypertension	3.5	2.3-5.2

Cardiovascular: MI risks
Ciruzzi et al.

	OR	95% CI
systolic BP < 140 on Rx	2.6	2.0-3.4
systolic BP > 140 on Rx	3.4	2.4-4.9
Untreated Hypertension	2.4	1.7-3.5



Degree of Myopia and Glaucoma Risk: A Dose-Response Meta-analysis



AHNUL HA¹, CHUNG YOUNG KIM¹, SUNG RYUL SHIM, IN BOEM CHANG², AND YOUNG KOOK KIM²

- **PURPOSE:** To verify the dose-response relation between the degree of myopia and open-angle glaucoma (OAG) risk
- **DESIGN:** Dose-response meta-analysis.
- **METHODS:** We searched the PubMed, EMBASE, and Cochrane Library databases for population-based studies published until November 30, 2020, and reporting on both myopia and OAG. Random-effect models generated pooled odds ratios (OR) and 95% CIs. Results robustness was confirmed by influence and subgroup analyses. A

- **CONCLUSIONS:** For each unit (1-D) increase in myopia, the risk of glaucoma increases by approximately 20%. The risk more steeply increases in high-degree myopia, representing a significant nonlinear relationship. (Am J Ophthalmol 2022;236: 107–119. © 2021 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>))

We know the challenges

- Traditionally, focus has been on **correcting visual impact** of myopia
- Significant research has identified **multiple interventions for control** of myopia, aimed at reducing myopia progression
- Research has identified **risk factors** for myopia
 - Early interventions aimed at reducing development of myopia
- Shift from passive management to **active management**
- **Aim to reduce impact** of myopia and its risk of myopia-related ocular pathology
- **Optometry practice differs widely:** scope and access.

World Council of Optometry

The Standard of Care For Myopia Management by Optometrists

The World Council on behalf of its members:

1. Defines the evidence-based standard of care as comprising of three main components
 - ✓ Mitigation
 - ✓ Measurement
 - ✓ Management
2. Advises optometrists to incorporate the standard of care for myopia within their practice including public education and education that explains
 - ✓ what myopia is
 - ✓ lifestyle factors that may impact myopia
 - ✓ the available approaches that can be used to manage myopia and slow its progression

Mitigation

Optometrists educating and counselling parents and children, during early and regular eye exams, on factors to prevent/delay onset of myopia.

Measurement

Optometrists evaluating the status of a patient during regular comprehensive vision and eye health exams (refractive error and axial length whenever possible).

Management

Optometrists addressing patients' needs of today by correcting myopia, providing evidence-based interventions (contact lenses, spectacles, pharmaceuticals) that slow progression.

The goal

- Incorporate standard of care for myopia management within their practice
- Shift from not just vision correction but includes education that explains
 - what myopia is
 - lifestyle factors that may impact myopia
 - the available approaches that can be used to manage myopia and slow progression

How is WCO supporting the resolution

Collate and
summarise evidence-
based best practice

Develop accessible
resources for
optometrists for use
in practice

Myopia website with
resources

Join
us

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WORLD COUNCIL OF OPTOMETRY

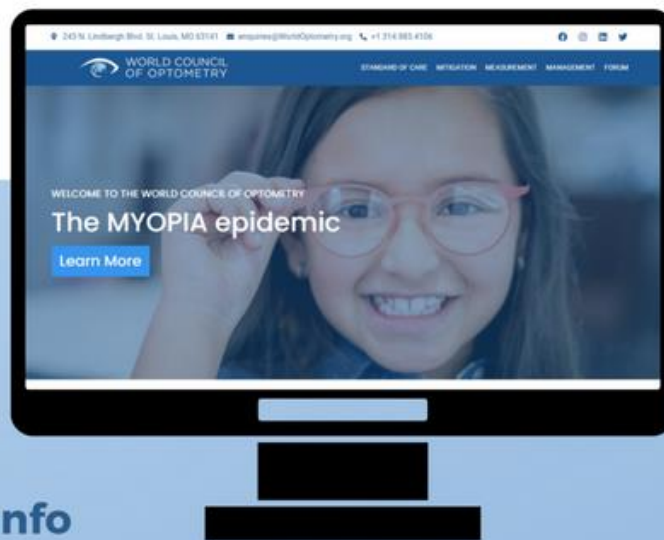
The MYOPIA epidemic

Everything you need to know about making myopia management standard of care in one place!

Visit our **online resource** today!



myopia.worldcouncilofoptometry.info



WORLD COUNCIL
OF OPTOMETRY



Make Myopia Management a Part of Your Practice Today!

Join optometrists worldwide in pledging to make myopia management the standard of care in their practices

Since the World Council of Optometry introduced its myopia management Standard of Care resolution in 2021, more than **25,000** optometrists around the globe have taken the pledge to make it an integral part of their practices.

Research has shown that actively managing myopia in childhood can slow onset and progression and prevent serious conditions such as retinal detachment and glaucoma in adulthood.

Embracing myopia management as a standard of care is smart for you and your patients. Become one of the many who are taking the pledge! And, spread the word among your colleagues who are interested in learning how to control myopia. It's not too early to start! Take the pledge today!

25,620

Individual Pledges

I Pledge - For Individuals

60

Organization Pledges

We Pledge - For Organizations

Thank you