



Blindness and vision impairment

14 October 2021

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Key facts

- Globally, at least 2.2 billion people have a near or distance vision impairment. In at least 1 billion – or almost half – of these cases, vision impairment could have been prevented or has yet to be addressed.
- The leading causes of vision impairment and blindness are uncorrected refractive errors and cataracts.
- The majority of people with vision impairment and blindness are over the age of 50 years; however, vision loss can affect people of all ages.
- Vision impairment poses an enormous global financial burden with the annual global costs of productivity losses associated with vision impairment from uncorrected myopia and presbyopia alone estimated to be US\$ 244 billion and US\$ 25.4 billion.

Definitions

The International Classification of Diseases 11 (2018) classifies vision impairment into two groups, distance and near presenting vision impairment.

Distance vision impairment:

Mylan v. Regeneron
IPR2021-00881
U.S. Pat. 9,254,338
Exhibit 2269

- **Mild** –visual acuity worse than 6/12 to 6/18
- **Moderate** –visual acuity worse than 6/18 to 6/60
- **Severe** –visual acuity worse than 6/60 to 3/60
- **Blindness** –visual acuity worse than 3/60

Near vision impairment:

- **Near visual acuity worse than N6 or M.08 at 40cm.**

A person's experience of vision impairment varies depending upon many different factors. This includes for example, the availability of prevention and treatment interventions, access to vision rehabilitation (including assistive products such as glasses or white canes), and whether the person experiences problems with inaccessible buildings, transport and information.

Prevalence

Globally, at least 2.2 billion people have a near or distance vision impairment. In at least 1 billion – or almost half – of these cases, vision impairment could have been prevented or has yet to be addressed.

This 1 billion people includes those with moderate or severe distance vision impairment or blindness due to unaddressed refractive error (88.4 million), cataract (94 million), glaucoma (7.7 million), corneal opacities (4.2 million), diabetic retinopathy (3.9 million), and trachoma (2 million), as well as near vision impairment caused by unaddressed presbyopia (826 million) (1).

In terms of regional differences, the prevalence of distance vision impairment in low- and middle-income regions is estimated to be four times higher than in high-income regions (1). With regards to near vision, rates of unaddressed near vision impairment are estimated to be greater than 80% in western, eastern and central sub-Saharan Africa, while comparative rates in high-income regions of North America, Australasia, Western Europe, and of Asia-Pacific are reported to be lower than 10% (2).

Population growth and ageing are expected to increase the risk that more people acquire vision impairment.

Causes

Globally, the leading causes of vision impairment are:

- **uncorrected refractive errors**
- **cataract**

- age-related macular degeneration
- glaucoma
- diabetic retinopathy
- corneal opacity
- trachoma

There is substantial variation in the causes between and within countries according to the availability of eye care services, their affordability, and the eye care literacy of the population. For example, the proportion of vision impairment attributable to cataract is higher in low- and middle-income countries than high-income countries. In high income countries, diseases such as glaucoma and age-related macular degeneration are more common.

Among children, the causes of vision impairment vary considerably across countries. For example, in low-income countries congenital cataract is a leading cause, whereas in middle-income countries it is more likely to be retinopathy of prematurity. As in adult populations, uncorrected refractive error remains a leading cause of vision impairment in all countries amongst children.

Impact of vision impairment

Personal impact

Young children with early onset severe vision impairment can experience delayed motor, language, emotional, social and cognitive development, with lifelong consequences. School-age children with vision impairment can also experience lower levels of educational achievement.

Vision impairment severely impacts quality of life among adult populations. Adults with vision impairment often have lower rates of workforce participation and productivity and higher rates of depression and anxiety. In the case of older adults, vision impairment can contribute to social isolation, difficulty walking, a higher risk of falls and fractures, and a greater likelihood of early entry into nursing or care homes.

Economic impact

Vision impairment poses an enormous global financial burden. For example, the annual global costs of productivity losses associated with vision impairment from uncorrected myopia and presbyopia alone were estimated to be US\$ 244 billion and US\$ 25.4 billion, respectively.

Strategies to address eye conditions to avoid vision impairment

While a large number of eye diseases can be prevented (e.g. infections, trauma, unsafe traditional medicines, perinatal diseases, nutrition-related diseases, unsafe use or self-administration of topical treatment), this is not possible for all.

Each eye condition requires a different, timely response. There are effective interventions covering promotion, prevention, treatment and rehabilitation which address the needs associated with eye conditions and vision impairment; some are among the most cost-effective and feasible of all health care interventions to implement. For example, uncorrected refractive error can be corrected with spectacles or surgery while cataract surgery can restore vision.

Treatment is also available for many eye conditions that do not typically cause vision impairment, such as dry eye, conjunctivitis and blepharitis, but generate discomfort and pain. Treatment of these conditions is directed at alleviating the symptoms and preventing the evolution towards more severe diseases.

Vision rehabilitation is very effective in improving functioning for people with an irreversible vision impairment that can be caused by eye conditions such as diabetic retinopathy, glaucoma, consequences of trauma and age-related macular degeneration.

WHO response

WHO's work is guided by the recommendations of the [WHO World report on vision \(2019\)](#) and the resolution on "[integrated, people-centred eye care, including preventable blindness and vision impairment](#)" that was adopted at 73rd World Health Assembly in 2020. The key proposal of the report and resolution is to make integrated people-centred eye care (IPEC) the care model of choice and to ensure its widespread implementation. It is expected that by shaping the global agenda on vision, the report and resolution will assist Member States and their partners in their efforts to reduce the burden of eye conditions and vision impairment and achieve the Sustainable Development Goals (SDGs), particularly SDG target 3.8 on universal health coverage.

Some of WHO's key areas of work and activities in the prevention of blindness include:

- Working with Member States and other partners in the field to provide recommendations on feasible global targets for 2030 on integrated people-centred eye care;
- Observing and promoting World Sight Day as an annual advocacy event;
- The ongoing development of technical tools to support the implementation of the recommendations of the World report on vision:
 - Guide for action for integrated people-centred eye care (IPEC)
 - Package of evidence-based eye care interventions to facilitate the integration of eye care interventions into health systems

- Mobile health toolkit for myopia to increase awareness and health literacy of modifiable risk factors, potential irreversible consequences of myopia and the importance of spectacle compliance and regular eye examinations
- The development and implementation tools to support countries to assess the provision of eye care services:
 - Eye care services assessment tool
 - Tool for Assessment of Diabetes and Diabetic Retinopathy Services
 - Tool for the Assessment of Glaucoma Services
 - Tool for the Assessment of Refractive Services
 - Tool for the Assessment of Rehabilitation Services and Systems

References

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2) Vision Loss Expert Group of the Global Burden of Disease Study. Trends in prevalence of blindness and distance and near vision impairment over 30 years: an analysis for the Global Burden of Disease Study. Lancet Global Health 2020. doi: 10.1016/S2214-109X(20)30425-3

3) Fricke, TR, Tahhan N, Resnikoff S, Papas E, Burnett A, Suit MH, Naduvilath T, Naidoo K, Global Prevalence of Presbyopia and Vision Impairment from Uncorrected Presbyopia: Systematic Review, Meta-analysis, and Modelling, Ophthalmology. 2018 May 9