Changing patterns in global blindness: 1988–2008

Prevalence of visual impairment

Changing demography

When the Community Eye Health Journal was launched in 1988, the world population was approximately 5.1 billion. Over the last 20 years, it has increased by approximately 30%, reaching 6.7 billion in 2008. During the same period, the world population has also become proportionally older, as the number of people aged 65 years and over has increased by approximately 55%, from 320 million in 1988 to 500 million in 2008. Since the prevalence of visual impairment becomes higher as people age, this combination of an increasing population and an ageing population is expected to cause a significant increase in the total number of blind people.1

Estimates of the number of people with visual impairment worldwide

In 1988, the number of people who were blind (visual acuity (VA) <3/60 in the better eye) was estimated to be 37 million worldwide. By 2002–04, the latest period for which we have data (see Table 1), it was estimated to be 45 million: 8 million blind due to uncorrected refractive error and 37 million blind due to other causes.2,3 It is thought that at least 60% of blind people are women.

Little was known in 1988 about the prevalence of low vision (VA <6/18 to 3/60). In 2002, the number of people with low vision was estimated to be 124 million worldwide, but this excluded low vision due to refractive error.2 Owing to a lack of data from surveys, it has only very recently become possible to estimate that there are 145 million people with low vision due to refractive error.3 This figure brings the overall number of people with low vision to 269 million.

In total, the number of people with visual impairment (which includes both low vision and blindness) is therefore estimated to be 314 million worldwide.

Causes of blindness

Over the last twenty years, the causes of blindness have changed in proportion and actual number. Cataract has remained the major cause of blindness globally. It is particularly important in Asia. The numbers of people

Table 1. Most recent estimates of the number of people with visual impairment (blindness and low vision) worldwide2,3,4

| Definition                        | Number of people (millions) |
|----------------------------------|-----------------------------|
| Blindness (eye disease)          | <3/60 to no light perception| 37  |
| Blindness (refractive error)     | <3/60 to light perception   | 8   |
| Blindness (all causes)           |                             | 45  |
| Low vision (eye disease)         | <6/18 to 3/60               | 124 |
| Low vision (refractive error)    | <6/18 to 3/60               | 145 |
| Low vision (all causes)          |                             | 269 |
| Total: Visual impairment (all causes) |                             | 314 |
null
Glaucoma

During the last twenty years, work has been undertaken to develop improved definitions and classifications of glaucoma. This has allowed for better estimates to be made of the number of people with this condition. It is likely that the current global estimate of 4.5 million people blind due to glaucoma actually falls short of the true figure, as many surveys do not include an assessment of visual field loss and are limited to a definition of blindness based only on visual acuity. Globally, 60 million people are likely to have one of the glaucomas and up to 8 million may be blind because of this disease. Because no simple, specific, and sensitive test exists for this condition, population-based screening cannot at present be advocated; opportunistic case detection should, however, be encouraged. Unfortunately, in many low- and middle-income countries, effective treatment for glaucoma is still out of reach: medical treatment requires the availability of affordable drugs and long-term patient compliance; surgical treatment requires patient acceptance, as well as surgical skill, experience, and the capacity for long-term follow-up. This is difficult to achieve in some settings.

Diabetic retinopathy

In 1988, there were no data on the global prevalence of diabetic retinopathy or of blindness resulting from this condition. It is now estimated that there are approximately 171 million people with diabetes worldwide. Of these people, probably 10–20% have some form of retinopathy and around 1.78 million are blind. There are now better-defined screening procedures and agreed treatment protocols based upon evidence from clinical trials. In appropriate settings, therefore, there can now be a public health approach to the control of visual loss from diabetes.

Age-related macular degeneration (AMD)

As life expectancy increases, AMD is becoming a more important problem, not only in high-income, but also in middle-income countries (see article on page 48). In 2002, it was estimated that 3.2 million people were blind from AMD. As yet, there is no proven prevention for AMD although smoking has been shown to be an important risk factor. Various surgical procedures are being tried in selected cases and recent studies indicate that vascular endothelial growth factor (VEGF) blockers can delay or stop progression of vascular AMD (see article on page 50). In spite of promising recent developments, there is, however, no proven therapy to reverse the degenerative process in all cases and current therapies remain expensive.

Making a difference with VISION 2020: The Right to Sight

In 1988, the WHO Prevention of Blindness (PBL) programme and the International Agency for the Prevention of Blindness (IAPB) had been in existence for ten years. Over the next decade, several important developments made it possible to conceive of a global initiative to eliminate avoidable blindness: the Mectizan® Donation Programme was established in 1987, low-cost IOLs became available in the early 1990s, and the SAFE strategy was launched in 1996. In addition, the relationship between vitamin A deficiency and childhood mortality had already been documented. Drawing on their experiences of cost-effective eye care delivery systems in several countries in the 1980s and 1990s, including in India and The Gambia, a group of non-governmental development organisations (NGDOs), together with the WHO, launched VISION 2020: The Right to Sight in 1999. This is a global initiative to eliminate avoidable blindness from cataract, trachoma, onchocerciasis, refractive error, vitamin A deficiency, and other causes of blindness in children by the year 2020.

The World Health Assembly has since adopted resolutions urging its member states to adopt the VISION 2020 principles. More than 90 NGDOs, agencies, and institutions, together with a number of major corporations, are now working together in this global partnership.

There is little doubt that the VISION 2020 initiative has raised awareness concerning blindness and the cost-effectiveness of available interventions. It has mobilised both government and private funding for eye care and it has generated a global public-private partnership working with a clearly defined focus and strategy. Estimates of global blindness made in 2002 were 15 million lower than the projections made for this same year when VISION 2020 was launched. There is also evidence that the number of people who are blind due to onchocerciasis and trachoma has decreased, as well as evidence of increasing cataract surgical rates in many countries. Our challenge now is to build on what has been achieved and to focus resources on the poorest communities in the world. The goal of VISION 2020 is to enable all persons to receive eye care and have the right to sight – which is one of their fundamental human rights.

References

1. Frick KD et al. The magnitude and cost of global blindness: an increasing problem that can be alleviated. Am J Ophthalmol 2003;135: 471–6.
2. Resnikoff S et al. Global data on visual impairment in the year 2002. Bull World Health Organ 2004;82: 844–851.
3. Resnikoff S et al. Global magnitude of visual impairment caused by uncorrected refractive errors in 2004. Bull World Health Organ 2008;86: 63–70.
4. International Agency for the Prevention of Blindness. State of the world’s sight. VISION 2020: The Right to Sight 1999–2005. IAPB, London, 2005.
5. Limburg H et al. Review of recent surveys on blindness and visual impairment in India and The Gambia. Br J Ophthalmol 2008;92: 315–319.
6. Marinho SR New steps toward eliminating blindness trachoma. N Engl J Med 2004;351:19; 2004–7.
7. Quigley HA et al. The number of people with glaucoma worldwide in the year 2020. Br J Ophthalmol 2001;85: 262–7.
8. World Health Organization. Prevention of blindness from diabetes mellitus. WHO, Geneva, 2006.
9. Andrews DM et al. Anti-vascular endothelial growth factor therapy for ocular neovascular disease. Curr Opin Ophthalmol 2007;18: 502–8.