Serge Resnikoff

Global Public Health Crisis

What's in Sight?
Preamble

Global Burden of Disease and WHO Global Target
Global Burden of Disease Study – Systematic Review

Levels of visual acuity estimated in this study

International Classification ICD-10

Visual Impairment = BL + MSVI
= < than 20/70

Moderate & Severe vision impairment

< 20/70 → ≥ 20/400

Blindness

< 20/400

Global burden: Blindness (PVA <20/400)
1990 - 2010

Age-stand. Prevalence

Number Blind

- 36%
Global burden: Blindness (PVA <20/400)
1990 - 2010

- 29%

5.3 Bo
6.9 Bo (+30%)
<table>
<thead>
<tr>
<th>Year</th>
<th>Cat. Deg.</th>
<th>URE</th>
<th>Mac. Deg.</th>
<th>Glauc.</th>
<th>DR</th>
<th>Tra.</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>28%</td>
<td>46%</td>
<td>2%</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
<td>19%</td>
</tr>
<tr>
<td>2010</td>
<td>20%</td>
<td>48%</td>
<td>4%</td>
<td>3%</td>
<td>2%</td>
<td>2%</td>
<td>22%</td>
</tr>
</tbody>
</table>

As a global target, the reduction in prevalence of avoidable visual impairment by 25% by 2019 from the baseline of 2010 has been selected for this action plan.

The global prevalence of avoidable visual impairment in 2010 was 3.18%. A 25% reduction means that the prevalence by 2019 would be 2.37%.
Changes in prevalence of Avoidable Visual Impairment, 1990 - 2010

21.4% reduction over 20 years (1.1% per year)

Projected reduction in prevalence of Avoidable Visual Impairment, 2010 - 2020

11% reduction
Projected reduction in prevalence of Avoidable Visual Impairment, 2010 - 2020

11% reduction

-25%
Changes in prevalence of Avoidable Visual Impairment, 1990 - 2010

- **Cataract:** - 37% over 20 years (- 1.9% per year)
- **URE:** - 12% over 20 years (- 0.6% per year)

Global burden of Visual Impairment due to URE
UNCORRECTED REFRACTIVE ERRORS
(108 million people in the world)

6.8 million Blind

101.2 million MSVI
Near distance VI:
1,095 million
with presenting
functional presbyopia

Classification Issue:
Near Distance VI
not included in ICD 10
The Problem: 1.2 billion people are vision impaired simply because they don’t have a pair of glasses.
Global and Regional Prevalence of Visual Impairment due to URE
Number Vision Impaired (in millions) due to URE in 2010

- South and C Asia
- East and SE Asia
- High Income
- Sub-Saharan Africa
- Latin America
- NAME

Prevalence of URE – PVA<20/70 all ages, age-standardised, 2010

- Asia, South
- Oceania
- Asia, Southeast
- Sub-Saharan Africa, East
- Latin America, Central
- Caribbean
- Latin America, Southern
- Asia, Central
- Europe, Central
- Europe, Western
- North America, High Income

Refraction errors in children aged 5-15:
56% to 88% Under-corrected

USA: 37% RE; 67% Uncorrected
China: 41% RE; 85% Uncorrected
Nepal: 3% RE; 88% Uncorrected
Tanzania: 3% RE 80% Uncorrected
Chili: 15% URE 56% Uncorrected

Reduction in prevalence of URE
PVA<20/70, all ages, 1990 – 2010

- Sub-Saharan Africa, Central
- Asia, Central
- Sub-Saharan Africa, West
- Europe, Eastern
- North Africa/Middle East
- Europe, Western
- Sub-Saharan Africa, East
- Latin America, Southern
- Sub-Saharan Africa, Southern
- Latin America, Andean
- Asia, South
- Oceania
- North America, High Income
- Latin America, Central
- Australasia
- Latin America, Tropical
- Asia, Southeast
- Caribbean
- Asia, East
- Europe, Central
- Asia Pacific, High Income
So...

- Current trend will not lead to a 25% reduction
- Need to double the reduction rate
  - Requires massive scale up
  - Needs to concentrate on underserved populations

- Role of “Myopia Epidemics” - a major challenge
Looking at Myopia specifically Meta-analysis

Overview of research process

1. STANDARDIZED DEFINITIONS OF MYOPIA

2. PREVALENCE OF MYOPIA COUNTRY-WISE
   Prevalence combined with population data from 2000 to 2050 (ages 0 to 100+). For 21 GBD regions Extrapolated to neighbouring counties

3. ADJUSTING FOR THE CHANGE IN PREVALENCE of myopia over time using age-specific data

4. PREVALENCE OF MYOPIA IN EACH DECADE calculated by Published prevalence x cumulative change (annual change x no of years)

Myopia defined as $\leq -0.50D$.

High myopia as $\leq -5.00D$.

- Studies in meta-analysis used various classifications of myopia, but definition based on most commonly used.
Prevalence of myopia

2 Billion myopes

5 Billion myopes

Rapid increase in myopia prevalence
Prevalence of Myopia, 21 Regions, 2000 to 2050

Projected number of high myopes in 2050

What are the implications?

Myopia affects 27% & high myopia 3%

Approx 50% of countries will have myopia ≥ 50% & high myopia 10%

Impact of myopia on individuals and Eye Care Services

High Myopia is a significant risk factors for Cataract (3.3x) and Glaucoma (14.4x)

Blindness and vision impairment due to Myopic macular degeneration(MMD) and other retinal complications will increase substantially
Myopic Macular Degeneration

• Already 1st cause of Vision Loss in some places in Asia

• Preliminary estimates
  – 10+ million visually impaired in 2015
  – 70+ million in 2050 if nothing changes
Implications

• Need for refractive services—spectacles, contact lenses and specialist services for managing myopia related complications will increase
A Global Response is needed

- A Global Issue – no country is to be spared, even the most developed

A clear success (Trachoma, Onchocerciasis, Cataract...) However, “elimination” is not possible, especially for chronic conditions
Global Response: WHO and partners

**Fig. 1. Three dimensions to consider when moving towards universal coverage**

- **Direct costs:** proportion of the costs covered
- **Services:** which services are covered?
- **Population:** who is covered?
- **Current pooled funds**
- **Extend to non-covered**
- **Reduce cost sharing and fees**

Health Financing WHO Report, 2010
Global Response: what’s next?

- WHO World Report on Vision
  - Planned for Oct 2018
  - Multisectoral approaches
  - Links to SDGs
  - Behavioral changes

Might lead to a Global Campaign