Blindness and Low Vision, an Overview of Opportunities for Health Services and Preventive Medicine

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Abstract

Nowadays in the world exists 29 million people who are blind. Low vision and blindness are the second leading cause of disability worldwide [WHO-a], but many cases are caused by preventable or treatable diseases. Health services must be prepared to face the problems that may rise, and the best way is to have knowledge of the magnitude and variety of the problems.

Keywords

Blindness; Low Vision; Education; Severe Vision Impairment; Visual Impairment

Introduction

A man waits in his car looking for the traffic lights go green; suddenly everything has turned white before him; he has been totally blind. He is just the first person who suffer a rare outbreak of blindness which affected persons who are intended to be in quarantine, but is unsustainable contain the disease; and the streets filled with blind victims of this inexplicable disease. This is part of the novel “Blindness”, written by the Portuguese, José Saramago. But really, are we so far from this gruesome scene?

In the world there exists approximately 285 million people who are blind, have severe low vision or near blind; among them 29 million are blind and almost 246 million have low vision problems. Around 90% of them live in developing countries [WHO-a].

Vision is one of the most important senses for human. As this diminishes or is lost, the relationship with the world around and ties of visual communication with the environment become a huge gap which is difficult to handle. [Cuéllar]

Blindness and severe visual impairment, together with existing health problems such as aging and worldwide overweight population will become a major global socioeconomic burdens and could interfere with the progress of many developing countries.

Numbers and Main Causes of Visual Impairment

Despite progress made in surgical techniques in many countries during the last ten years, cataract (47.9%) remains the leading cause of visual impairment in the world (except for developed countries) followed by glaucoma (12.3%), age-related macular degeneration (AMD) (8.7%), corneal opacities (5.1%), diabetic retinopathy (4.8%), childhood blindness (3.9%), trachoma (3.6%), and onchocerciasis (0.8%) Figure 1 [WHO-b] These visual impairments in general are avoidable.

In the least-developed countries and in particular Sub-Saharan Africa, the causes of avoidable blindness are primarily, cataract (50%), glaucoma (15%), corneal opacities (10%), trachoma (6.8%), childhood blindness (5.3%) and onchocerciasis (4%) [WHO-b] Table 1.

Although cataract is not a major cause of blindness in developed countries, globally it is still the leading cause,
accounting for almost half of all cases, despite improved delivery of cataract surgical services in many parts of the world. [Resnikoff]

![Pie chart showing causes of visual impairment](image)

**TABLE 1 MAIN CAUSES OF VISUAL IMPAIRMENT**

<table>
<thead>
<tr>
<th>Main causes of visual impairment</th>
<th>Leading cause of visual impairment in all areas of the world (%)</th>
<th>Leading cause of visual impairment in the least-developed countries (and in particular Sub-Saharan Africa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>47.9%</td>
<td>Cataract 50%</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>12.3%</td>
<td>Glaucoma 15%</td>
</tr>
<tr>
<td>Age-related macular degeneration (AMD)</td>
<td>8.7%</td>
<td>Age-related macular degeneration (AMD) --</td>
</tr>
<tr>
<td>Corneal opacities</td>
<td>5.1%</td>
<td>Corneal opacities 10%</td>
</tr>
<tr>
<td>Diabetic retinopathy</td>
<td>4.8%</td>
<td>Diabetic retinopathy --</td>
</tr>
<tr>
<td>Childhood blindness</td>
<td>3.9%</td>
<td>Childhood blindness 5.3%</td>
</tr>
<tr>
<td>Trachoma</td>
<td>3.6%</td>
<td>Trachoma 6.8%</td>
</tr>
<tr>
<td>Onchocerciasis</td>
<td>0.8%</td>
<td>Onchocerciasis 4%</td>
</tr>
<tr>
<td>Other</td>
<td>12.9%</td>
<td>Other 8.9%</td>
</tr>
</tbody>
</table>

**Lifestyle Changes of the Population, a Breeding Ground for Visually Impaired?**

It is important underline that changes in human behavior and lifestyle over the last century have led to a large increase in the global incidence of overweight and obesity [Zimmet] and have become a major risk factor for health population [Álvarez J.]. The cost of obesity-related medical care in the United States has been estimated at 5-7% of overall health spending. Thus the epidemic of childhood obesity emerges through the globe and prevalence of adult obesity continues to rise alarmingly [James P. T.].

These data acquired an important relevance if we consider all the possible complications or illnesses that stem from being overweight or obese, not to mention they are one of the most important problems of public health due to the high costs of treatment and prevention of its complications. Talking about facts of overweight has a purpose and it is due to Diabetes Mellitus (DM). Overweight is considered the most common cause of blindness in the working population on industrialized countries where Diabetic Macular Edema is the most frequent cause of visual impairment in diabetic patients and Proliferative Diabetic Retinopathy is responsible for the most severe visual deficits [Alberti].

The largest proportion of blindness is necessarily related to ageing. Conditions such as Glaucoma, Cataracts and
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Diabetic Retinopathy, to name a few, also correspond to changes directly related to aging, which have been increasing in frequency, by increasing life expectancy at birth and population growth in the world, mainly in the group of people aged over 60 [Nezer].

Blindness and Visual Impairment in the World

There is considerable variation in the prevalence of blindness and visual impairment within the region, as well as the proportion of blindness and visual impairment from different ophthalmic diseases and conditions, moreover there are considerable data for a few countries, with little data for others. [Furtado]

About 65% of people with visual impairment are older than 50 years; although this age group represents only 20% of the world population, it is necessary to consider that the growing aging and increased life expectancy of the population in many countries also increased the number of persons at risk of visual impairment associated with age. It is estimated that by 2020 worldwide approximately 79.6 million people will suffer from glaucoma, this being the second leading cause of blindness worldwide [Quigley]. Glaucoma is a disease that causes more patients with irreversible blindness in the world [Zarate].

The Cost of Blindness and Visual Impairment

For now, the real numbers of the economic cost of blindness and visual worldwide impairment is not really known. Using a model based on loss wages, Carter and Lansing estimated that annual economic losses for Latin America are between US$8 and $29 billions, but those numbers do not include the cost of caregiving, disability payments or family economic losses. [Furtado]

Considering data from 2004 was estimated that in Australia the total cost of vision disorders was around $9.85 billions [Taylor HR -2006].

The annual global economic impact of blindness and low vision in the year 2000 based loss of productivity was estimated to be US$42 billion, and this numbers projected to rise to US$110 billion by the year 2020 [Taylor HR -2007].

The global direct health costs to eliminate avoidable blindness over a ten-year period from 2011 to 2020 is estimated at $632 billion per year, which comprises the cost to treat the backlog substantially increased service provision required to increase the health workforce ratio recommended by VISION 2020. [Armstrong] If successfully implemented the global initiative VISION 2020 was calculated to reduce the cost of blindness and low vision from $110 to US$58 billion by the year 2020 [Resnikoff].

Conclusions

The problem of blindness and low vision must be understood and approached from various angles, such as politics, psychologists, technologists, ophthalmologists, optician, public health workers, policy makers, families, etc., because there are many angles from which we can take actions and tries to mitigate the impact on population and increase the quality of their life.

Although overlooked vision loss must be a priority on the international health agenda. A factor to consider is that blindness and visual impairment is a big obstacle to the quality of life of the persons both for those who suffer from any eye condition or disease and their families; also it is necessary to gather information that allows us to conduct an effective national planning focused on people affected by blindness or people who have visual impairment.

It is critical to have the ability to create awareness to treat with due importance blindness, low vision and its impact on society: it is true that related to eye health is sometimes a back seat to other conditions or diseases but we should not forget that about 2% of the population has problems of blindness or severe vision loss, and of those about 80% of the causes of these situations could be preventable or curable with proper medical care.

If we see all the data together, we can clearly known the importance of the global impact of blindness and vision loss, and it is important to show that effective actions are not only demand effectiveness, but demand saving.
REFERENCES


   http://www.who.int/blindness/causes/en/


