

## **PART III**

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### **Education, Training and Development**



# Optometric Education in Sudan & the Future

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**Abstract:** This paper presents estimates of the prevalence of visual impairment and blindness globally and in Sudan, based on the best available evidence derived from the recent studies. The paper aimed to highlight the significant role of optometric profession in the detection, screening, evaluation, monitoring and treatment of the visually impaired individuals and prevention of the curable blindness in Sudan. The optometric education in Sudan established in 1956 and urgently need an upgrade. The educational syllabi and the profession as whole need a scrutiny and update to match the international optometric level and to meet the future challenges in the primary eye health care expected in Sudan.

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## 1 Introduction

According to the WHO reports, there are 314 million people globally who are visually impaired from all causes. Uncorrected refractive errors become the main cause of low vision and second cause of blindness (WHO, 2008). However, 75% of the cases are preventable and curable. Thirteen million of the 314 million are children of which 50% preventable and curable. Sudan has population around 40 million, 15% are children, 80% are adults, 5% are aged more than 65 years (World Bank, 2002). Blind and visually impaired are estimated to be around 50%. The eye health care services provide less than 30% of the cases presented. This creates more than 70% deficit in the services. The optometric education and the qualified optometrists work as police force to the eyes and sight. Therefore, they are capable to make the difference. The ultimate aim is to prevent, cure and restore vision with other concerned professions and organisations. Fighting blindness and restoring vision will allow individuals to be able to engage in education fairly and be productive and contribute in their communities. (2020, The Right to Sight).

## 2 Methods

### 2.1 Definitions

**Optometry** is a **primary** eye health care profession concerned with eyes structures, as well as vision, visual systems, and vision information processing in humans. In some countries has the duty of seeing the non surgical cases at the **secondary** level. The other is being **ophthalmology** which is a branch of Medicine which covers **primary, secondary and tertiary** medical eye health care profession. **Optometry** education, certification, and practice are regulated in most countries. **Optometrists** and optometry-related organizations interact with governmental agencies, other health care professionals, and the community to deliver eye and **vision primary health care** and training as well as **vision science research** ([www.optometry.net](http://www.optometry.net); [www.thecollegeofoptometrists.org](http://www.thecollegeofoptometrists.org))

### 2.2 Optometrists serve the general public

- Work with the children vision needs.
- Work with the elderly vision needs.

- Partially-sighted persons who need specialized visual devices.
- Develop & implement ways to protect eyes at work.
- Specialize in contact lenses, sports vision, vision therapy, or laser eye correction.
- Run screening and monitoring programme for deferent general and ocular pathological conditions.

### 2.3 The typical optometric examination has five components

1. History-taking of both general health related, eye health and optical functioning-related aspects of the patient.
2. The evaluation, observation and management of the optical eye health status.
3. The detection of eye disease, and evaluating the visual characteristics of the eyes.
4. The monitoring of the optical functioning of the eye.
5. Referral of general health cases requiring further medical attention.

([www.optometry.net](http://www.optometry.net); [www.thecollegeofoptometrists.org](http://www.thecollegeofoptometrists.org))

### 2.4 Sight is a process produced by

Light from objects travel into the eye and a sharp image focused on the retina. An electromagnetic pluses produced by the retina and travel via the optic nerve pathway to the cortex. An interpretation at the cortex is happening from the previous accumulated experiences.

Sight should be corrected up to individual's threshold which mostly 6/6 or better. This correction should consider form, colour, distance, near, day and night vision. What can go wrong in vision? Things can go wrong at early age or later during life. In other words, the defects can be congenital or can be acquired. Some changes are age related conditions. Most of the changes can be examined and treated optically and/or medically and/or surgically. When the visual acuity is 3/60 or less with full optical correction, the person will be categorised internationally as blind. Blind defined as to be unable to perform any work for which eyesight is essential. Partial sight person is to be substantially and permanently handicapped by defective vision caused by congenital defect, illness or injury (Dickenson, 1998). Recent proposed changes to the definitions and categorizations of blindness are available to blind and partially sight are published by the who in line with the Global Initiative for the Elimination of Avoidable Blindness (Vision 2020, the Right to Sight). These definitions have included refractive errors impairment. The correction of refractive error is cost effective intervention and is one of priorities under the disease control scheme. The parallel schemes of screening and monitoring ocular and systemic diseases which have ocular complication are cost effective too (Ismail, et al, 1998).

WHO reported, 314 million people in the world are disabled by poor eye sight of which 75% preventable and curable. Thirteen million of them are children of which 50% preventable and curable (WHO, 2008).

### 2.5 Causes of blindness

Except for the most developed countries, senile cataract remains the leading cause of blindness in **all regions of the world**. Uncorrected refractive errors impairment is the second cause of impair-



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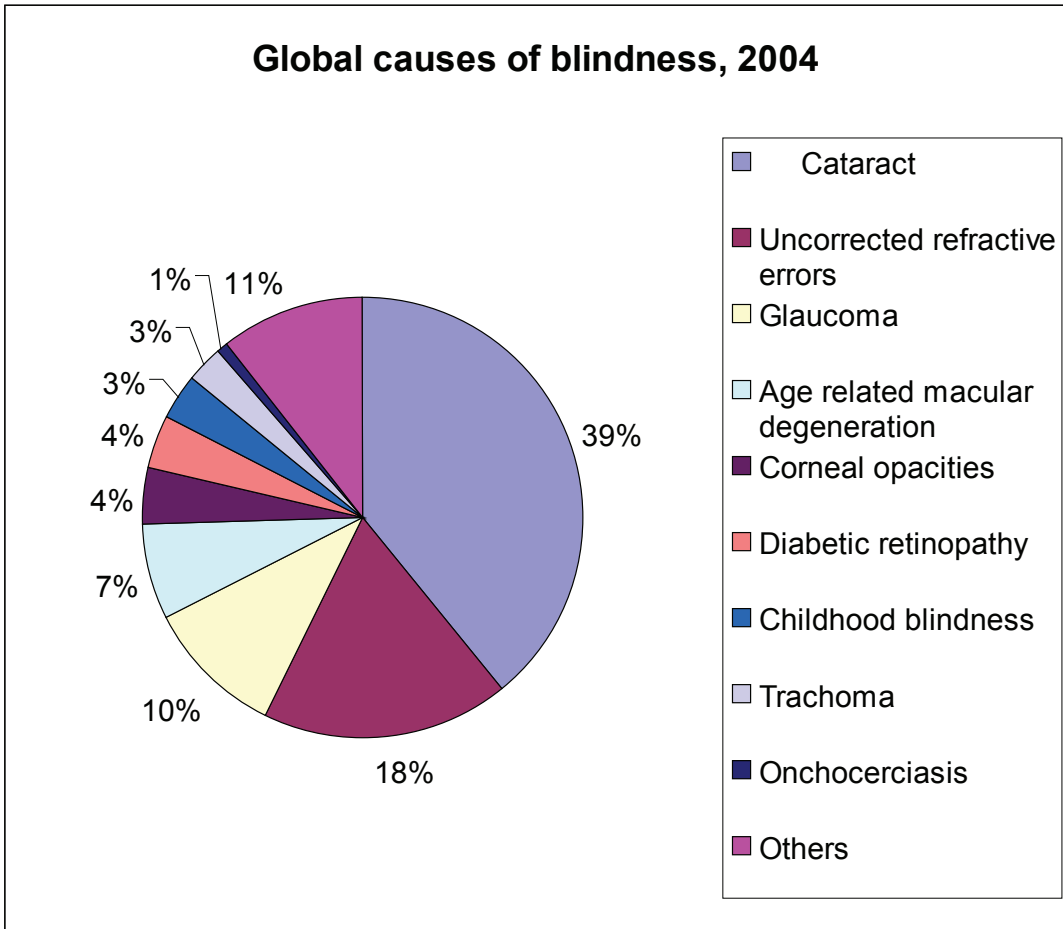
ment. Glaucoma is the third leading cause of blindness globally as well as in **most regions**. Age-related macular degeneration (AMD) is ranking forth on the global scale. However, in developed countries, AMD is the leading cause of blindness, due to **the growing number of people over 70 years of age**. Other major causes for blindness are trachoma, onchocerciasis, other corneal opacities, diabetic retinopathy, and eye conditions in children (e.g. cataract, retinopathy of prematurity and vitamin A deficiency) (WHO, 2008).

## 2.6 Causes of blindness can potentially all be prevented and/or treated

WHO estimates globally, up to 75% of all blindness is avoidable. Causes of blindness vary considerably from region to region, depending on local circumstance. 50% of the cases of childhood blindness are avoidable (WHO, 2008).

These to include:

- Increased public awareness and utilization of eye health care services.
- Increased availability and affordability of eye health care services.
- Increased global political commitment to prevention of visual impairment.
- Increased professional commitment to prevention of visual impairment.
- Commitment and support of non-governmental organizations.
- Involvement and partnership with the corporate sector.
- More effective primary eye care activities as an integral part of the primary health care system which have contributed to the decline in vision loss from trachoma, onchocer-

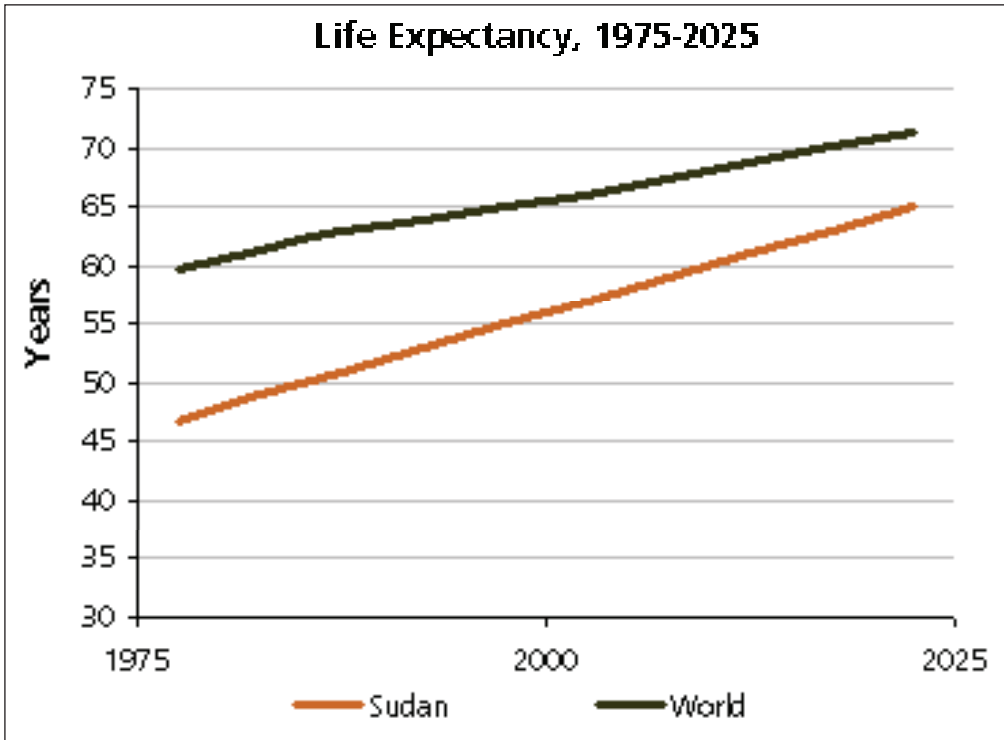


Bulletin of World Health Organization; January 2008, 86 (1)

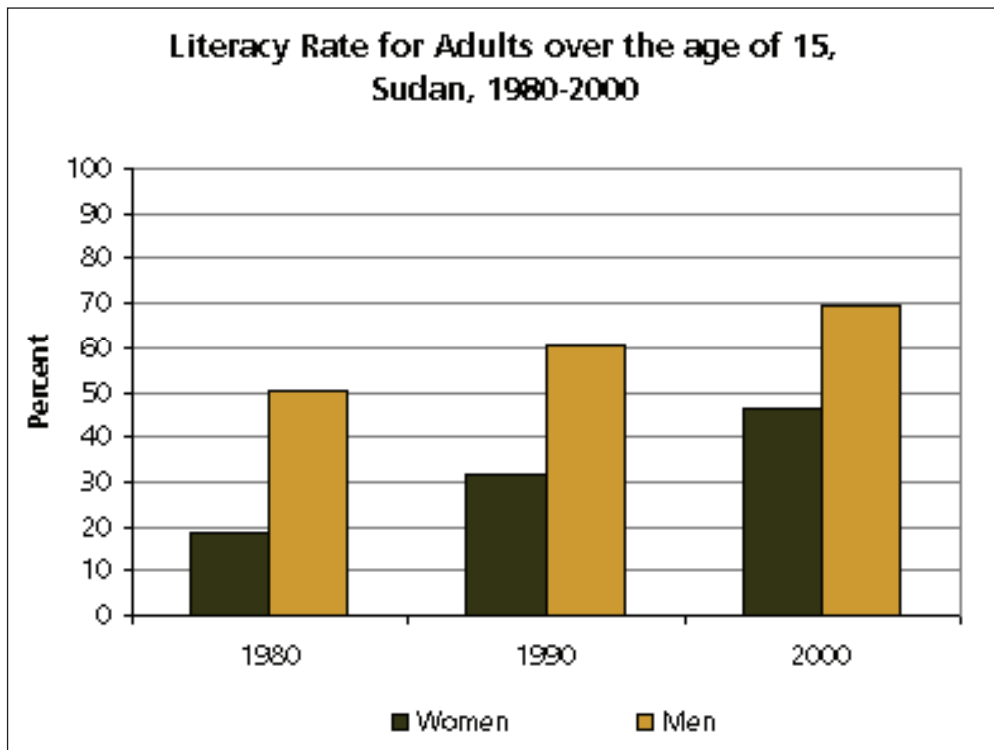
ciasis, vitamin A deficiency and even from cataract through better services including outreach case finding and eye health education. Significant successes with elimination of blindness efforts in the Gambia, India, Morocco, Nepal, Sri Lanka, Thailand... (WHO, 2004)

Sudan population is around 40 million, 15% are children, 80% are adults, and a round 5% are aged 65 years and above (WHO, 2004). Blind and visually impaired cases are about 50%. The service is covering about 30% of presented cases. Three million cases possibly is “too late” to cure which 15% of the cases which make 15% only who had been seen by an eye health care personnel. The study suggesting 10 million individuals are in need of an eye test to evaluate and treat their vision impairment. The remaining 4 million either have no access or they are not aware of their need for an eye test (Unpublished data, 2008).

This clearly creates an area for the optical and medical ocular personnel to consider in their imminent and future strategic plans. The plans should consider major changes in the curriculum delivered to all eye health care personnel. The syllabi should nourish the graduate with the necessary means of understanding and knowledge at an up to date standard in the eye health care.



www.who.org 06/12/2008



www.who.org 06/12/2008







### 3 Discussion

#### 3.1 The future

Our ultimate aim is to substantially contribute in the reduction of the blind and visually impaired population as well as to be ready to cope with the possible increase due to the increase of the life expectancy. A long strategic plan of 10 -20 years is recommended to be designed with a quick help and support to the existing institutions and organisations that is to include:

1. Man power enrichment, curriculum upgrade and update. The equipment should be increased and updated. The research should be activated to act as a base to the knowledge and understanding of the profession and future planning. Schemes to provide continuous education and training programme to update the knowledge of the graduates and maintain consistency in quality of the graduates. Plans to create links with local relevant professions, regional, and international similar institutions.
2. Section of ophthalmic dispensing and industry of lenses and frames to be activated and supported.
3. Satisfy the local market governmental and private sectors.
4. Supply the Arabic employment market with a competitive standards and possibly international market.

#### 3.2 Pre-optometric education

- Prerequisites for admission to optometry schools are similar to most medical, dental, pharmacy, and biomedical programme.
- Schools of optometry generally require students to take undergraduate courses focusing on a broad range of sciences.

#### 3.3 Professional bodies should be activated to play their positive role in the profession

- Regulate the profession.
  - Promote optometry to the public.
  - Monitoring the quality of delivery.
  - Continuous Education and Training (CET) (optional or compulsory)
    - Industry involvement
    - link with licensing
- [www.theworldcouncilofoptometry.org](http://www.theworldcouncilofoptometry.org)

### 4 Conclusion

#### 4.1 The Author's wish list

- Universities need urgently to qualify staff (any grants of funds....)
- Syllabuses need an updating and upgrading (Grants & funds for books & IT facilities..)
- Professional legislation is an issue.
- Equipment are desperately needed (grants & funds.....)
- Professional bodies should be activated (Grants & funds for IT facilities.....)
- Optical industry should be involved (Grants & funds for research.....)



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- Ministry of scientific research and technology (Grants & funds for everything...)
- Strategy of quality control (model from the high committee for quality at the ministerial level.....)
- Coordination and cooperation between local, regional, and international universities and organisations should be boosted.

The optometric education and the optometrists' personnel work as police force to the eyes and sight. Therefore, they are capable to make the difference. Economically they are less cost in money and time to educate and graduate compared to the cost and time to educate and increase the number of the ophthalmologists.

With reference to this conference which gathered an elite group of scientists, educators, specialists, sponsors and decision makers; I think the opportunity is great for the entire participants to suggest a strategic plan to be adopted by the institutions who are providing optometric services

in Sudan. The author has a great believe and hope that the participants will initially give some promises (grants, funds, scholarships, equipment, it facilities, etc...) to support the institute who is willing to adopt the activities in the suggested strategic plan.

The ultimate aim is to prevent, cure and restore vision. Fighting blindness and restoring vision will allow individuals to be able to engage in education fairly and be productive and contribute in their communities. (Vision 2020, The Right to Sight).

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