

Visual impairment in South Africa: achievements and challenges



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Abstract

Estimates of the prevalence and causes of visual impairment in South Africa are reviewed against the existing services and limitations in the country. The magnitude¹ of visual impairment and the projected increase worldwide over the coming decades have been recognized as having potentially far-reaching social, economic and quality of life implications for not only the affected individuals but also for their families and communities. Two-thirds or more of all blindness is avoidable, in that the causes are preventable or treatable.^{2, 3} Early detection, prevention and management programs are needed to reduce the impact of visual impairment. Approximately 80% of the South African population is indigent, relying on public hospitals and clinics and the remaining 20% of the population has access to private health care.⁴ As the majority of eye care professionals are in private practice, access to eye care services are available to only a minority of the population. This paper reviews the current services in South Africa and the challenges that lie ahead.

Keywords: Low vision, visual impairment, blindness, visual impairment in Africa, public health

Introduction

In 1999 the World Health Organization (WHO) and the International Agency for the Prevention of Blindness launched a global

initiative for the elimination of avoidable blindness with the theme “Vision 2020: the Right to Sight”. This worldwide initiative aims to eliminate avoidable blindness by the year 2020, in order to give all people in the world the right to sight. The primary goal of the initiative is elimination of avoidable blindness due to five diseases or conditions: cataract, trachoma, onchocerciasis, Vitamin A deficiency, and refractive errors. These conditions were selected not only because of the burden of visual impairment they represent but also because of the feasibility and affordability of interventions available for treatment and prevention. Cataract and refractive errors occur in all populations and there exist cost effective sight-restoring interventions. Vision 2020,⁵ involves the active participation of United Nations agencies, governments, eye care organizations, health professionals, philanthropic institutions and individuals working together in a global partnership to accomplish this goal by the year 2020. It has been recognized that major efforts need to be coordinated nationally, regionally and internationally to restore eyesight to the visually impaired and prevent others from becoming blind.

The burden of visual impairment is not distributed uniformly throughout the world: the least developed regions carry the largest share.⁶ Six main WHO regions were identified: Africa, Americas, East Mediterranean, Europe, South East Asia and Western Pacific. The African region includes 48 countries with a total population of about 500 million. The region covers the African continent south of the Sahara and

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it is often divided into English, French and Portuguese speaking countries. Africa includes many of the world's least developed countries and has a particularly high blindness and disease burden. The overall prevalence of blindness^{7, 8} in the region is about 1% with cataract as the leading cause, followed by trachoma, onchocerciasis and childhood blindness. Vision 2020 was launched in English-speaking Africa⁹ in April 2000. South Africa, as part of this program, offered its full support both in terms of public health and political commitment.

Definitions

The various definitions^{6, 10-12} of visual impairment, low vision and blindness are defined for clarification. The International statistical classification¹⁰ of diseases, injuries and causes of death, 10th revision (ICD-10): H54(9) identified the following ranges of visual loss:

- visual impairment includes low vision as well as blindness;
- low vision is defined as visual acuity of less than 6/18, but equal to or better than 3/60, or a corresponding visual field loss to less than 20 degrees in the better eye with best possible correction (ICD-10 visual impairment categories 1 and 2);
- blindness is defined as visual acuity of less than 3/60, or corresponding field loss to less than 10 degrees in the better eye with best possible correction (ICD-10 visual impairment categories 3, 4 and 5).

Countries are encouraged to use these criteria in surveys and reporting data on blindness and low vision, but this definition does not define the population in need of low vision services.

A working definition of low vision adopted at a WHO¹¹ meeting 1992 in Bangkok added a functional dimension to the ICD classification. It was agreed at the meeting that a broader working definition was needed for purposes such as planning, service delivery and resource allocation and read as follows:

- A person with low vision is one who has impairment of visual functioning even after treatment and/or standard refractive correction, and has a visual acuity of less than 6/18 to light perception, or a visual field of less than 10 degrees from the point of fixation, but who uses, or is

potentially able to use, vision for the planning and/or execution of a task.

This definition is followed by explanatory notes which point out, among other issues, that the definition is solely designed for reporting purposes and should not be used for eligibility of services.

A more concise definition of low vision for purposes of characterizing the size of the low vision population was proposed at the Oslo Workshop October 2004:¹²

- Visual function of a person who, even after treatment and/or standard refractive correction, has, in the better eye, a visual acuity ranging from less than (worse than) 6/18 (0.33) to light perception, or a visual field whose extent in all areas around the fovea (that is, around the physiological center of the visual field) is less than 10 degrees (a diameter of less than 20 degrees) in the eye with the field of greater central extent, but who uses, or is potentially able to use, vision for the planning and/or execution of a task.

Prevalence

According to Resnikoff *et al*,⁶ the estimated number of people with visual impairment in 2002 was in excess of 161 million: 37 million were blind and 124 million were reported as having low vision. The vast majority were from developing countries and South Africa fell into the "Afr-E" sub region together with six other African countries (Central African Republic, Congo, Ethiopia, Kenya and United Republic of Tanzania). The number of visually impaired persons in this region was estimated at approximately 14 million (four million were estimated as blind and 10 million as low vision).

The World Health Organization (WHO, 2000) had previously estimated⁹ that 180 million people worldwide are visually impaired with 40-45 million meeting the criteria for legal blindness. Among those who were legally blind, only 10 to 15% were said to be functionally or totally blind. The remaining approximately 170 million people worldwide have significant visual disabilities resulting in low vision. Sub-Sahara Africa has an estimated 5-6 million blind and 16-18 million persons with low vision. Around 60% of them live in

twenty English-speaking countries including Botswana, Eritrea, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mauritius, Namibia, Nigeria, Seychelles, Sierra Leone, South Africa, Swaziland, Uganda, the United Republic of Tanzania, Zambia and Zimbabwe. For English-speaking Africa, estimates of about 3-4 million blind and 10-12 million persons with low vision are accepted.

In October 2001, South Africans were counted for the second time as citizens of a democracy. Statistics¹³ released by Statistics South Africa (2001) reported a population count of 44 819 778 million. The findings indicated that approximately 2.3 million or five percent of the total population had a disability. The definition of disability in this survey was: *A physical or mental handicap which has lasted for 6 months, or expected to last at least 6 months, which prevents the person from carrying out daily activities independently, or from participating fully in educational, economic or social activities.* Visually impaired persons were recorded at 1.3% or approximately 600 000 persons, making up the largest disability group (see Figure 1)¹³. McLaren *et al*¹⁴ reported that numerous methodological problems were encountered in the collection and interpretation of the disability prevalence data. These problems included the definition of disability and whether it was the disability or impairment being measured,

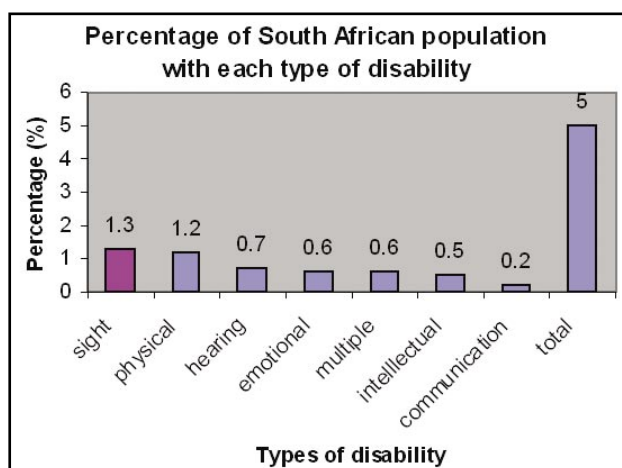


Figure 1. Data (adapted from figure 15, reference number 13) obtained from statistics released by Statistics South Africa (2001) indicated that 2 255 982 or five percent of the total South African population were reported to have a disability preventing full participation in life activities, such as in the educational, social or work spheres. Visually impaired persons accounted for 1.3% or 577 096 persons, making up the largest disability type in the group.

whether the disability was merely reported versus being confirmed, the severity (mild, moderate or severe) of the disability, and how multiple disabilities were recorded - that is, were the people or the impairments counted? Such factors need to be taken into consideration when using, analyzing or interpreting disability prevalence data. The authors¹⁴ made mention of two population-based studies conducted in Northern Transvaal¹⁵ (now Limpopo) and KwaZulu-Natal¹⁶ relating to visual impairment. The Limpopo study conducted in 1988 reported a 5.7% prevalence of blindness (visual acuity <3/60) while the KwaZulu-Natal (1993) study reported figures of 1.4% incidence of visual impairment and 1.0% blindness. Assessment of vision ranged from normal vision (6/6), to vision which could be corrected with spectacles (6/18), to visual impairment that includes low vision (6/60), and to blindness. The main causes of blindness were age-related cataract (59%) and chronic glaucoma (22.9%) whilst the main causes of visual impairment were age-related cataract (75.3%), refractive error (10%) and chronic glaucoma (4.7%). Although both these studies are province specific, there does appear to be some correlation with the national data.

Data from the National Guideline Prevention of Blindness in South Africa published¹⁷ in December 2002 reported a 0.75% prevalence of blindness in the South African population. Eighty percent of blindness was reported avoidable, either preventable or treatable, by simple and inexpensive means. In addition, 80% of blind people were noted as living in rural areas. The prevalence of childhood (0-15 years) blindness correlated with the under five mortality rate, and was estimated to be 0.47 per 1000 children in South Africa. It has been suggested that countries with under five mortality rates over 50/1000 live births are likely to have vitamin A deficiency of public health significance.¹⁸

Estimates on the prevalence of visual impairment among children are not well established. It has been estimated¹¹ that globally the total number of children with low vision is at least one million, at a very conservative level. English-speaking Africa⁹ has an estimated 200 000 blind children and about half of them die within two years of becoming blind. The main cause of blindness in this region is corneal scarring (around 70% of all

cases) from measles, vitamin A deficiency, conjunctivitis of the newborn and harmful traditional medicines. Other causes of childhood blindness include congenital cataract and hereditary disorders. Gilbert and Foster¹⁸ report that of the 1.4 million blind children worldwide, an estimated 25% are blind from retinal diseases, 20% from corneal pathology, 13% due to cataract, 6% from glaucoma, and 17% due to anomalies affecting the whole globe. More than 40% of childhood blindness¹⁹ is caused by conditions for which preventative or therapeutic interventions have proven effectiveness.

Causes

According to Lewallen and Courtright⁷, the major causes of blindness in Africa are cataract, trachoma and glaucoma. Cataract²¹⁻²⁵ is reported to account for approximately half the blindness in Africa and trachoma²⁶⁻²⁸ is estimated as affecting approximately 2.2 million people. Other causes of blindness include onchocerciasis or river blindness, Vitamin A deficiency, diabetic retinopathy and trauma. These causes differ from developed countries where the major causes of low vision are those, such as age-related macular degeneration, that are difficult to prevent and difficult to manage.³ The prevalence of diabetes mellitus varies in different populations according to genetic predisposition and environmental risk factors (particularly diet)².

The limited statistical data available suggests that the most common cause^{9, 15, 17, 30-32} of visual impairment in South Africa is cataract (66%), followed by glaucoma (14%), refractive error (10%) and other (10%) conditions such as Retinitis Pigmentosa, Stargardt's Disease, Ushers Syndrome and Lebers Congenital Amaurosis. Fortunately, South Africa has been declared "trachoma free" since about the year 2000 and it remains a notifiable medical condition.^{17, 29}

The Department of Health South Africa¹⁷ reported on a survey conducted in 1996 on avoidable causes of childhood blindness in South Africa. The survey conducted amongst children attending schools for the blind showed corneal scarring to be a significant cause of blindness amongst rural African children. Corneal scarring may result from a combination of Vitamin A deficiency, measles, secondary bacterial infec-

tion and the use of harmful traditional medicines or Ophthalmia neonatorum. In industrial countries corneal disease is responsible for less than 2% of blindness in children while in the poorest areas of Africa and Asia corneal scarring accounts for 25-50%.¹⁸ Sustainable and effective strategies need to be developed to control Vitamin A deficiency. South Africa and Zambia have introduced fortification legislation³³ where commonly consumed foods have been fortified as a cost-effective and safe way to virtually eliminate vitamin and mineral deficiencies. Nutrition education and measles immunization are provided through an initiative called Integrated Management of Childhood Illnesses supported by the Department of Health. Corneal disease is gradually reducing but cataract and glaucoma are on the increase in South Africa.¹⁷ Retinopathy of prematurity (ROP) is emerging as another significant cause of preventable childhood blindness, especially amongst Indian and White children in South Africa. In urban settings of Latin America, the former socialist economies, and now Asia, ROP is reaching almost epidemic proportions with between a quarter and a half of all childhood blindness in some countries due to ROP.³⁴ Cataract and glaucoma are also significant causes of visual impairment in children in South Africa.

Oduntan *et al*³⁵ carried out a population based survey to determine the causes and prevalence of low vision and blindness in the central region of the Limpopo Province of South Africa. They confirmed cataract as being the most common cause of low vision as in many other African countries. A previous paper by Oduntan³⁶ presenting data on the causes of low vision and blindness among South African children attending special education schools in the Northern Province, cited albinism as being the major cause of low vision among the school children. Other causes included cataract, glaucoma and nystagmus.

Uncorrected refractive error^{4, 37} is amongst the leading causes of avoidable vision loss. However, there is a severe lack of epidemiological data on the magnitude of visual loss due to uncorrected refractive errors. One study on refractive error and visual impairment in South African children by Naidoo *et al*³⁸ confirmed the significance of uncorrected refractive error

in the Durban area. The study reported that although the prevalence of reduced vision in school-age African children is low, most of it is because of uncorrected refractive error. Only 19% of children with significant refractive error were wearing glasses, leaving 81%, with the potential to benefit from spectacles. The gross lack of eye and vision care services in the public sector in South Africa has resulted in a significant number of children without appropriate refractive correction. Oduntan,³⁹ when evaluating the impact of eye care services in the Mankweng health sub-district of the Northern Province, also reported that the most common reason for eye examination was refractive error (45.9%). Other reasons for eye examinations included routine eye examinations (14.5%), double vision (10.6%), tearing (9.4%) and eye diseases (3.8%). Mankweng health sub-district is reported to be one of the more privileged rural communities in South Africa in terms of eye care services, unlike most rural communities elsewhere in South Africa as a result of the community eye care services provided by the Optometry department at Limpopo University and at Mankweng Provincial Hospital.

Services

In Africa, the bulk of blindness is curable and efforts are being made to produce cost effective remedies. However, currently demands for eye care services far outweigh the available resources,⁸ not only in terms of funding and facilities for cataract surgery, but also for correction of refractive errors and low vision rehabilitation. Eye care services in South Africa are mainly provided by private optometrists, ophthalmologists, and non-government organizations (NGOs). There are approximately 250 ophthalmologists in the private sector catering for the needs of 8 million people and only about 25 government clinics to support the eye care needs of 32 million people in South Africa.⁹ Each day in South Africa an estimated⁴⁰ 100 people become needlessly blind as a result of cataract. Cook and Stulting²⁴ estimated that among a rural population of approximately 19 million South Africans, there was a backlog of 113 000 un-operated cataract-blind people and an incidence of 27 000 new cataract blind per year. To deal with new cases of cataract blind-

ness, the WHO² recommends one ophthalmologist post and facility per 250 000 population (either through government or private sector with equal distribution for urban and rural populations). The recommended cataract surgery rate is at least 2000 per million populations per year. Currently, one of the major obstacles facing eye care services in South Africa is the scarcity of ophthalmological manpower to deal with eye care programs in the country.

Uncorrected refractive errors are a significant cause of avoidable visual disability, especially in developing countries. Lack of awareness and recognition of this correctable cause of visual disability, compounded by the non-availability of affordable services for testing and the provision of corrective lenses, has been highlighted in population surveys⁴ of blindness and visual impairment worldwide. Optometry is an essential part of the team necessary to contribute towards solving the problem, mainly by understanding global eye care needs and delivering effective and sustainable vision care to people in need, thereby ensuring their fundamental right to sight.⁴¹ Holden and Resinoff⁴¹ reported that throughout the world, optometry has been the major provider of vision correction, but usually from a private practice setting. They noted that public health optometry does not reach, in any organized way the communities that are in most need. This applies also to optometric care in South Africa. The South African Optometric Association have recognized the role optometrists could play in alleviating visual impairment through correction of refractive errors, and in July 2000 have pledged their support to the Right to Sight project in an attempt to bridge the gap between urban and rural eye care services. Their aim is to bring eye care to the uninsured and unemployed, economically compromised and needlessly blind populations previously excluded from private sector eye care. The indicative figures at that stage showed 1 806 000 refractive impaired, an additional presbyopic population of 8 600 000, making a total of 10 406 000 in need of refractive correction. Although the availability of eye care personnel in South Africa is much better than the rest of Africa, particularly with regard to optometrists, poor distribution has resulted in most of the population finding refractive

services inaccessible or unaffordable.⁴²⁻⁴⁴ The reality is that for the majority of South Africans, eye care services are at a level equal to those in the rest of the African continent.

Part of the problem for optometry in South Africa is that the previous government's health policies did not include optometric posts at state or district hospitals. The Department of Health, Limpopo Province has had the privilege of employing optometrists in government hospitals since 1991 and currently has about 30 optometrists in various hospitals in the Province. Members of the International Centre for Eyecare Education (ICEE), an international non-profit, non government organization and others are trying to get more posts approved. A dedicated African office was opened in Durban, South Africa by ICEE. Team members have been working closely with the Departments of Health in KwaZulu-Natal, Western Cape, Mpumalanga and the Free State for the creation and management of optometric posts within the public health systems. Reports from ICEE indicate their commitment to finding sustainable solutions to the problem of eye care delivery and spectacle supply in South Africa for the public sector. Health care workers are currently being trained in refraction and later the training will include low vision care. They report working with over 50 eye clinics in varying capacities around the country, with their eventual goal being one practitioner to every 20 000 people.

The author is unaware of any low vision practice provided by ophthalmologists and once again there are a limited number of optometrists providing low vision care. Low vision clinics are found at the optometric teaching institutions at University of Johannesburg (including the previous RAU and TWR), KwaZulu Natal, Free State and Limpopo University. In addition, Optima College manages a low vision clinic with optometric services provided by the students and staff at University of Johannesburg, Auckland Park campus. Throughout South Africa there are an estimated ten optometrists offering full low vision services in their private practice. Currently there is virtually no low vision service being provided in the public sector although there are plans in conjunction with the National Department of Health to change this situation. In order to accommodate the eye

care needs of the large numbers of economically compromised patients, private sector initiatives are also being introduced. An important component of their strategy is to form joint ventures and partnerships with organizations both local and international, as well as with other practitioners in the field. The Phelophepa Train⁴⁵ is an example of an innovative, effective and sustainable project to deliver primary health care services including eye care, dental, general medical care and health education programs to remote regions in South Africa. The concept, initially the brainwave of optometry, has been delivering eye care services to millions of rural South Africans since 1994. Eye care is provided, by optometric students from the various academic institutions, under supervision.

Public Health is one of the key priority areas identified by the South African Optometric Association (SAOA) and various projects such as the Community Eye Care Centres and the recently established Bonang Centres have been initiated to meet the eye care needs of economically compromised patients in the public sector as well as other identified community areas. The strategy is to establish clinics within public sector hospitals as well as joint ventures and partnerships with other disciplines and organizations. Because of the many organizations operating within the public health arena, a public health forum was established to facilitate collaboration, obviate the risk of duplication and engender partnerships where possible. Public health stakeholders that participate in this forum include the National Department of Health, SAOA, International Centre for Eyecare Education (ICEE), Retina South Africa, South African Guide Dogs Association, St Johns, Lions International, the Bureau for the Prevention of Blindness and Ophthalmological Society of South Africa.

In 1980 Van der Walt⁴⁶ reporting on the services of the Bureau for Prevention of Blindness, a NGO, made clear mention of the overwhelming demand for refractive error correction in rural communities. Over fifty years ago the South African National Council for the Blind (SANCB) identified the lack of eye care services in remote areas of South Africa. The Council addressed the deficiencies in eye care services by establishing the Bureau for the Prevention

of Blindness which operate mobile clinics to reach areas where eye care services were inadequate or non-existent. Ophthalmology played the major part in these eye care services and an optometrist on a field tour was considered a luxury although the statistics of the field tours identified the need for services to correct refractive errors. Optometry was requested to go into partnership with the Bureau and more than an occasional presence of optometrists became possible. Today, the Bureau tours still run and optometrists are requested to volunteer their services. However, the question remains; is optometry doing enough to meet the demand for refractive services in the rural areas?

More than 100 tours are undertaken annually by the Bureau for Prevention of Blindness to provide eye care services to rural and township areas without access to adequate facilities. Records show that close to one million people have been screened since 1944, over 100 000 spectacles have been supplied and approximately 45 000 sight restoring operations have been performed. Three different programs now exist to meet the eye care needs of rural and township South Africans. These include:

- provincial and sight saver tours⁴⁷ where full teams undertake visits to remote areas. The mobile eye care units are based at centrally located hospitals from where they visit clinics and other hospitals in the vicinity. More than 100 tours are undertaken annually by four mobile units which are manned by trained ophthalmic nurses and volunteer ophthalmologists and optometrists. The two Sight Saver mobile units target areas with limited eye care infrastructures and high population density. These visits usually last four days and take place every three months.
- permanent eye care centers where a full stock of equipment and medication is maintained by the hospital. One of the long-term goals of the Bureau is to establish permanent Eye Care Centers for every 800 000 to a million indigent people in the rural communities.
- and finally urban tours where people from townships and squatter camps who do not have access to suitable medical care are treated.

The Bureau is also responsible for the Motswedi Information Centre located at Optima College in Pretoria, which is a multi-media information

centre supplying health workers, educators and students with information and teaching materials pertaining to the prevention of blindness and highlighting the importance of community health. The centre offers a walk-in and distance enquiry service as well as information material on loan or for sale.

The SANCB,⁴⁸ the largest NGO in South Africa, founded in 1929 currently maintains nine provincial councils, 32 national and seven international blindness related organizations, 20 workshops, 51 self-help groups and 20 schools for visually impaired learners. Optima College as one of the successful resources of SANCB, offers visually impaired adults independence training and guidance so that they are able to continue functioning effectively in their communities. Numerous training courses including orientation and mobility, braille, typing and activities of daily living are offered. Students at the college also have access to the services of a social worker, occupational therapist and low vision rehabilitator, if needed. A variety of vocational training courses such as call centre training, telephony, bridging courses, train-the-trainer, computer literacy and advanced computer training courses such as A+ Technical Training and programming are offered. Satellite venues in other provinces, offer similar services but on a smaller scale. Other services include the Low Vision Centre which operates a low vision clinic and is also involved in the importing of low vision devices, and the Goldfields Resource Centre which has a large selection of non-optical assistive devices for blind and visually impaired people.

The Orientation and Mobility school, established in 1974 by the South African Guide Dogs Association, trains sighted instructors of all ages and ethnic groups to teach visually impaired people the skills of independent mobility and skills of daily living after which they return to their communities to train the visually impaired in their own language and cultural backgrounds. The school trains about six students each year and there are approximately 45 instructors in the field at present.

National Guidelines¹⁷ on Prevention of Blindness in South Africa are available from the Department of Health. The department recognises the elimination of avoidable blindness

as both a social as well as a moral imperative. Their objectives are to support and coordinate prevention programs at primary, secondary, tertiary and quaternary levels, to protect and promote the rights of visually impaired persons and reduce the prevalence of blindness in the country. The proposed human resources regarding eye care or blindness prevention are to provide at least one nurse at each clinic or community health centre trained in primary eye care, one ophthalmic nurse per 100 000 population and one optometrist per 250 000 population at secondary level, and one ophthalmologist or ophthalmic medical officer per one million population at tertiary level.

In July 2003, the National Department of Health instituted a policy⁴⁹ of free health care for all disabled people who are indigent and have a moderate to severe disability. Free health care for the disabled offers inpatient and outpatient hospital services such as diagnosis and treatment, specialized services, rehabilitation and provision of assistive devices such as spectacles and intra-ocular lenses. People with moderate to severe functional or activity limitation and/or psychosocial participation restriction, lasting longer than one year, or a prognosis that the disability will last longer than one year qualify for this free service. The activity/functional limitation or participation restriction needs to exist after maximum correction or control of impairment. Visually impaired persons with permanent irreversible vision loss thus fall into this category and should be able to receive free service provided they meet the criteria for qualification which includes a means test and income based classification test. The visual criteria define moderate disability as acuity of between 6/24 to 6/36, severe disability as visual acuity of 6/60 to 3/60 and blindness as $<3/60$. All acuity findings are for vision in the better eye, after maximum correction. No criteria for visual field loss are apparent in the manual. Many challenges for implementation of these services still exist. Some of these challenges are readiness of the provinces, continuity of care, the limited number of rehabilitation therapists to classify and provide services, the need for additional human resources and training, limited funds and the high cost of assistive devices. Unfortunately, limited or even no budgets or systems seem to

be in place to provide for even the most basic needs except in a few isolated cases.

Challenges

The management of visual impairment differs from most other health problems as many of the causes of vision loss can be prevented or treated at a relatively small cost per person. The challenges in South Africa are, however, unique due to the disparity in access to and provision of eye care services across the various provinces. Generally the services provided in the urban areas are far better than those available in the rural areas where access to even the most basic eye care and vision rehabilitation services often do not exist. Apart from the scarcity of manpower, several factors have been identified as barriers that prevent people from presenting for evaluation and management of their eye problems. These include cost, accessibility of service, poor knowledge of availability of services, fear of outcome of surgery, and cultural and social barriers.

Eye care services to disadvantaged communities should not be limited to providing eye and vision needs. Preventative measures such as education and promotion should be included. Oduntan *et al*³⁹ reported that even where eye care services did exist in rural areas, there was a need for eye care education and promotion programs. Their study reported that eye care services in the rural community are often under-utilized due to poor economic status, lack of transportation, level of literacy, lack of awareness and traditional beliefs. The evaluation of eye care services³⁹ in the rural communities in the Mankweng health sub-district of the Northern Province in 2001, showed that only about a quarter of the population studied had previously had eye examinations. A large percentage (62.5%) of the population felt that there was no need for an eye examination if there was no apparent eye problem. Many aspects of their findings suggested the need for eye health education and public awareness campaigns.

Further challenges to reduce the impact of visual impairment include the training of more eye-care personnel, teachers, care givers and others to increase the eye care practitioner-patient ratio; development of models of service delivery which are accessible and affordable to

all; promotion and development of prevention programs; delivery of appropriate and affordable technology; education and implementation of disability awareness policies for the visually disabled such as inclusive schooling, free health care and the Equity Bill which creates equal opportunities for all disabled people including equal employment opportunities. South Africa has made considerable progress since the ending of apartheid in 1994, by instituting democratic elections and adopting one of the most progressive constitutions. The South African Constitution adopted in 1997 set the pace for the new paradigm with clauses such as: "... there may be no discrimination against any person on the grounds of his race, gender...age, disability, religion ...or language" and "Everyone has the right to basic education, including adult basic education and training and equal access to education..." In addition, the White Paper on Integrated National Disability Strategy specifically states promotion of equal opportunities for all disabled people. An understanding of disability as a human rights and development issue leads to recognition and acknowledgement that people with disabilities are equal citizens and should therefore enjoy equal rights and responsibilities.⁵⁰ The Employment Equity Act was created as a part of the National Strategy in South Africa for employment of the disabled. Unfortunately, the Act does not specify any quota for the employment of disabled and is not being enforced and thus many companies have not implemented a strategy of employment for the disabled. In addition, the inclusion of visually impaired persons in this category is not widely known. Campaigns to promote the employment of visually impaired persons under this act still need to be undertaken.

Conclusion

Numerous policies have been initiated by the South African government in an attempt to expand eye care services to people in need of support. The emphasis is on a fundamental shift in how disabled people are viewed; away from the individual medical perspective, to human rights and development of disabled people. The new social model is based on the belief that the circumstances of people with disabilities and the discrimination they face are socially cre-

ated phenomena and have little to do with the impairments of disabled people. This paradigm shift from the medical to the social model has come about largely through the development of strong organizations of disabled people. The challenge ahead are in the implementation and funding of these policies.

The impact of lost productivity due to blindness as well as the direct costs of education and rehabilitation has a significant effect on families, communities and nations, particularly those least able to afford such losses. Conversely, the prevention and cure of blindness through equitable access to appropriate care can produce enormous savings for countries and support development in many ways.⁵¹ Africa is considered the region of the world with the greatest need for human resource development for eye care.² In South Africa, eye care services are concentrated in urban areas and are generally lacking in the rural communities due to scarcity of resources, trained eye care personnel and poor accessibility. National and provincial departments of health, NGOs, eye care practitioners and personnel and other interested parties at all levels need to be encouraged to continue to plan, coordinate and implement programs that will provide good quality, affordable and appropriate services for the visually impaired in order to significantly reduce the impact of visual impairment in South Africa.

References

1. Frick KD, Foster A. The magnitude and cost of global blindness: an increasing problem that can be alleviated. *Am J Ophthalmol* 2003 **135** 471-476.
2. World Health Organization (WHO). Global initiative for the elimination of avoidable blindness. World Health Organization Prevention of Blindness and Deafness Report 2000; WHO/PBL/97.61 Rev2.
3. Watkins RD. The management of global blindness. *Clin Exper Optom* 2001 **84** 104-112.
4. World Health Organization (WHO). Elimination of avoidable visual disability due to refractive errors. World Health Organization Prevention of Blindness and Deafness Report 2001; WHO/PBL/79.
5. World Sight 2002- seeing is believing.

- Vision 2020 Report on World Sight, 2002.
6. Resnikoff S, Pascolini D, Etya'ale D, Kocur I, Pararajasegaram R, Pokharel G, Mariotti SP. Global data on visual impairment in the year 2002. *Bulletin of the World Health Organization* 2004 **82** 844-851.
7. Lewallen S and Courtright P. Blindness in Africa: present situation and future needs. *Br J Ophthalmol* 2001 **85** 897-903.
8. Mburu FM and Steinkuller PG. Ocular needs in Africa: increasing priorities and shrinking resources. *Soc Sci Med* 1983 **17** 1687-1691.
9. World Health Organization (WHO). Global initiative for the elimination of avoidable blindness. 2000 Press Release WHO/27.
10. International statistical classification of diseases and related health problems 10th revision. Vol 1- Diseases Tabular List. Geneva: World Health Organisation, 1992.
11. World Health Organization (WHO). Management of low vision in children. World Health Organization. Program for the prevention of blindness Bangkok 1992; WHO/PBL/93.27.
12. The Oslo invitational workshop. Toward a reduction in the global impact of low vision. The International Society for Low Vision Research and Rehabilitation, New York, NY USA 2005.
13. Statistics South Africa. Census 2001. Pretoria: Statistics South Africa, 2003.
14. McLaren P, Solarsh G, Saloojee G. Disability and disablement. In: South African Health Review. Ed: Ijumba P, Day C, Ntuli A. Health Systems Trust 2004 Issue 7 pp163-173.
15. Bucher RJ, Ijsselmuiden CB. Prevalence and causes of blindness in the northern Transvaal. *Br J Ophthalmol* 1998 **72** 721-726.
16. Cook C, Knight SE, Crofton-Broggs I. Prevalence and causes of low vision and blindness in northern KwaZulu. *S Afr Med J* 1993 **83** 590-593.
17. National guideline: Prevention of blindness in South Africa. Department of Health, Dec 2002.
18. Gilbert C and Foster A. Blindness in children: control priorities and research opportunities. *Br J Ophthalmol* 2001 **85** 1025-1027.
19. World Health Organization (WHO). Preventing blindness in children. Report of a WHO/IAPB scientific meeting. WHO/PBL/00.77. Geneva: WHO, 2000.
20. World Health Organization (WHO). Low vision care for the elderly Report 1996. WHO/PBL/96.57.
21. Foster A. Cataract and "Vision 2020 - the right to sight" initiative. *Br J Ophthalmol* 2001 **85** 635-639.
22. Thylefors B. Much blindness is avoidable. *World Health Forum* 1991 **12** 78-86.
23. Rotchford AP, Johnson GJ. Rapid assessment of cataract surgical coverage in rural Zululand. *S Afr Med J* 2000 **90** 1030-1032.
24. Cook CD, Stulting AA. Prevalence and incidence of blindness due to related cataract in the rural areas of South Africa. *S Afr Med J* 1995 **85** 26-27.
25. Steinkuller PG. Cataract: the leading cause of blindness and vision loss in Africa. *Soc Sci Med* 1983 **17** 1693-1702.
26. Kuper H, Buchan JC, Foster A. Time to learn from what is known. *Br J Ophthalmol* 2004 **88** 156.
27. Ballard RC, Fehler HG, Fotheringham P, Sutter EE and Treharne JD. Trachoma in South Africa. *Soc Sci Med* 1983 **17** 1755-1765.
28. Kok PW. The epidemiology of trachoma blindness in Southern Africa. *Soc Sci Med* 1983 **17** 1709-1713.
29. Management and control of eye conditions at primary level. National Guideline of Department of Health. Undated.
30. Pascolini D, Mariotti SP, Pokharel GP, Pararajasegaram R, Etya'ale D, Negrel AD, Resnikoff S. 2002 global update of available data on visual impairment: a compilation of population-based prevalence studies. *Ophthalmic Epidemiol* 2004 **11** 67-115.
31. Fafowora OF, Osuntokun OO. Age-related eye disease in the elderly members of rural African community. *East Afr Med J* 1997 **74** 435-437.
32. Rotchford AP, Johnson GJ. Glaucoma in Zululand: a population-based cross-sectional survey in a rural district in South Africa. *Arch Ophthalmol* 2002 **120** 471-478.
33. Robertson H. Zimbabwe chooses staple food fortification to reduce malnutrition. *Nutriview* 2003 **4** 4-5.
34. Gilbert C, Rahi J, Eckstein. Retinopathy of

- prematurity in middle-income countries. *Lancet* 1997 **350** 12-14.
35. Oduntan AO, Nthangeni, Ramudzuli and Madu SN. Causes and prevalence of low vision and blindness in black South African adults in the Limpopo Province. *S Afr Optom* 2003 **62** 8-15.
 36. Oduntan AO. Causes of low vision and blindness in black South African children attending special education schools in the Northern Province. *S Afr Optom* 2001 **60** 120-123.
 37. Naidoo K and Govender P. Case finding in the clinic: refractive errors. *Community Health* 2002 **15** 39-40.
 38. Naidoo KS, Raghunandan A, Mashige KP, Govender P, Holden BA, Pokharel PG, Ellwein LB. Refractive error and visual impairment in African children in South Africa. 2003 *Invest Ophthalmol Vis Sci* 2003 **44** 3764-3770.
 39. Oduntan AO, Raliavhgw M. An evaluation of the impact of the eye care services delivered to the rural communities in the Mankweng health subdistrict of the Northern Province. *S Afr Optom* 2001 **60** 71-76.
 40. Guidelines for cataract surgery in South Africa. Department of Health. 2001.
 41. Holden BA, Resnikoff S. The role of optometry in Vision 2020. *Com Eye Health* 2002 **15** 60-61.
 42. Ferreira JT. Die rol van optometrie in primêre gesondheidsorg. *S Afr Optom* 1991 **50** 175-178.
 43. Herse P. An ophthalmic survey of African patients presenting at rural eye clinics in South Africa. *Optom Vis Sci* 1991 **68** 738-742.
 44. Mc Gregor T. Optometry's strategies for meeting the vision care challenges in the new South Africa. *S Afr Optom* 1994 **53** 52-57.
 45. Bulbulia A, Ferreira JT. The Phelophepa mobile health study: Prevalence of open angle glaucoma. *S Afr Optom* 1997 **56** 51-60.
 46. Van der Walt SJ. Optometry and the Bureau for the prevention of blindness. *S Afr Optom* 1980 **39** 123-124.
 47. Cook CD, Stulting AA. Impact of a sight-saver clinic on the prevalent blindness in northern KwaZulu. *S Afr Med J* 1995 **85** 28-29.
 48. Biennial Report 36 South African National Council for the Blind, 2002-2003.
 49. Free Health care for disabled people at hospital level. Department of Health, 2003.
 50. Republic of South Africa. The White Paper on an integrated national disability strategy. Pretoria; Government Printer, Nov 1997.
 51. Elimination of avoidable blindness. World Health Organization 2003 Fifty-sixth World Health Assembly A56/26.