CONFERENCE PAPER

GLOBAL BLINDNESS AND THE NATION

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ABSTRACT

In this presentation, the major causes of blindness and blindness according to geographical regions are considered. World blindness has become a global problem and is different in various regions of the Third World. The problems of the developing countries require individual solutions. Prevention of blindness in Singapore and around the region is considered from a local perspective. A national consciousness that involves every ophthalmologist is required, just as every individual has a contribution to make towards the prevention of blindness.

Keywords: *World Health Organisation (WHO), International Agency for the Prevention of Blindness (IAPB), Prevention of Blindness (POB/PBL), Non-governmental Organisations (NGO)*

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WHAT IS BLINDNESS?

"O dark, dark, dark" Samson Agonistes

WHO DEFINITION

There is still no definition of blindness which is universally accepted. The International Classification of Diseases (World Health Organisation, 1965) includes blindness believed to be congenital, but excludes impaired vision due to refractive error.

Specifically defined, it refers to a central visual acuity of 6/60 or worse with the best correcting lens, or a field defect in which the field has contracted to such an extent that the widest diameter of visual fields subtends an angular distance no greater than 20 degrees.

Not specifically defined, it includes the less specific "economic blindness" which means inability to do any kind of work, industrial or otherwise, for which sight is essential. In more recent years, WHO has adopted, for easy compliance, a definition of best vision less than 3/60, or counting fingers at 3 metres[1].

GLOBAL BLINDNESS

Figures for the number of people blind from all causes worldwide are, at best, only an estimate. Accurate data are still unavailable, or unreliable, even in countries where blindness is registered.

Each year, the number of blind people in the world is estimated to increase by more than 1 million. By the year 2000, the figure is expected to rise to 100 million. This number will continue to rise unless specific measures are taken to overcome the problem.

The World Health Organisation (WHO) estimated that Asia alone holds 58 % of the world's blind, with figures of 40 million as a modest estimate, and another 20 million severely visually impaired.

Mind-boggling as these figures may sound, Sir John Wilson, the founder of the International Agency for Prevention of Blindness (IAPB), and himself blind, emphasised that people do not become blind by statistics, but as individuals.

With mass blindness at our doorsteps, what is our realisation and what has been our participating role? Have we contributed towards blindness prevention until that contribution became our experience?

CONCEPT OF WORLD BLINDNESS

Strictly speaking, the term "blindness" (an emotion-laden word) should be restricted to irreversible blindness.

Visual impairment due to cataract is readily reversible, given adequate surgical techniques and provided there is no other eye pathology.

But because cataract blindness has become the commonest cause of visual impairment worldwide (particularly in the Third World), the concept of blindness includes that caused by cataract, globally.

GLOBAL BLINDING CONDITIONS

1. Cataract
2. Xerophthalmia
3. Trachoma
4. Onchocerciasis

Except for cataract, which is age-related and multifactorial, the other blinding conditions are deprivation-related. Xerophthalmia is due to vitamin A deficiency, whereas trachoma and onchocerciasis are caused by specific infective agents, with underlying poor hygiene as a common denominator.

Cataract

Cataract is the example par excellence. A disease so commonplace, yet so totally curable, it has for a long time eluded public awareness as a leading cause of world blindness. Now, as a result of surveys of the blind population, cataract has emerged as a top-ranking cause of world blindness. The sheer geographical scale and the lack of skilled manpower has created a "cataract back-log" in almost all regions of the developing world. But the

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problems that exist are as different in India and China (Asian countries) as they are in Peru (or any other Latin American country), where patients will not lie on the ground, whereas "cataract camps" with patients lying on the floor are a permanent feature of the Indian subcontinent. As a global problem, there is universal agreement that screening has to be better and surgery, more cost-effective. All countries with a cataract back-log are in agreement that available surgical facilities are not utilised maximally, eg services in the field may not be utilised because of the hot season. There also appears to be a mis-match between manpower and demand - not merely is there an insufficient number of surgeons as a general rule, but even when there are enough surgeons, they require incentives to perform free cataract surgery or to go into the rural areas.

Xerophthalmia

Xerophthalmia is a major cause of childhood blindness in large parts of Asia, Africa, Latin America and the Western Pacific. Children with xerophthalmia, caused by vitamin A deficiency, also risk dying. Their dietary deficiencies are exacerbated by childhood infections, particularly measles, diarrhoea and respiratory diseases. Lactating mothers are also at risk. Yet, xerophthalmia is completely preventable by supplying the child with vitamin A, preferably in fortified doses. The education of mothers on the natural sources of vitamin A in green leafy vegetables is also an integral component of national programmes in countries where the disease is prevalent.

Trachoma

Trachoma is an ancient disease still rampant in the Third World. Forty years after the discovery of chlamydia agents by Chinese scientists in 1954, an effective vaccine against trachoma has still to be found, despite intense research worldwide. Trachoma remains a major problem in all regions where the culture revolves around a river, eg the Nile, the Yellow River and the Ganges. Epidemiological surveys of prevalence are still inadequate. The disease is related to poor personal hygiene, sanitation and socio-economic changes, improvements of which are doubtful or difficult to come by. Although there is effective antibiotic therapy, the blinding complications of trachoma continue to be a problem in the poorer countries and remote regions.

Onchocerciasis

Around the world, there are some 28 million people suffering from onchocerciasis, the largest numbers being in West and Central Africa, the Carribean (following the slave trade), and Latin America. Ivermectin, a product that has been used for many years to destroy worms in animals, has been found to be effective in eliminating the filaria of the Samilian fly and in sterilising the adult female fly. The drug has been used on a large scale in hyperendemic areas, but there are problems with mass distribution. It will go a long way towards medically controlling onchocerciasis, but it is not realistic to expect complete eradication because the drug cannot break the transmission cycle. The vector has to be destroyed (by insecticides) and more screening is required in endemic areas.

Table I – Overview of blindness in the six WHO regions 1990-1994

Region	Pop. (million)	Prev.	No. Blind	Causes	Major Constraint	Important development
Africa	550 (10%)	0.8 - 1.4	6.6 (19%)	Cataract Trachoma Onchocerciasis	Lack of trained people.	New training programmes. Further NGO involvement.
Americas	740 (14%)	0.2 - 0.7	3.2 (9%)	Cataract Glaucoma Diabetic retinopathy	Accessibility for isolated populations.	Increased involvement of ophthalmologists. Promotion of cataract services. Formation of OEPA for oncho control.
East Mediterranean	410 (8%)	0.6 - 0.8	2.9 (8%)	Cataract Trachoma Vitamin A deficiency	Accessibility for rural populations.	Regional workshops. NGO involvement in delivering eye care.
Europe	860 (15%)	0.2 - 0.4	2.6 (8%)	Cataract Glaucoma Diabetic retinopathy	Negative changes in the economic situation of countries.	Promotion of links between well-resourced and poorly-resourced European countries.
South East Asia	1350 (25%)	0.6 - 0.8	9.5 (27%)	Cataract Glaucoma Vitamin A deficiency	Management in service delivery.	Workshops in management. Resource mobilisation from World Bank and Lions.
Western Pacific	1550 (28%)	0.6 - 0.8	10.2 (29%)	Cataract Glaucoma Vitamin A deficiency	Accessibility of island and rural communities.	Good development of national programmes, eg. Vietnam.
Total	5460 (100%)	0.2 - 1.4	35.0 (100%)	Cataract Trachoma Glaucoma	Accessibility Manpower Management	Manpower training. Resource mobilisation National programme development.

Source: International Agency for the Prevention of Blindness, 5th General Assembly, Conclusions and Recommendations, 1994[2]

BLINDNESS IN GEOGRAPHICAL REGIONS OF THE WHO

Table I shows an overview of blindness in the six geographical regions of the WHO for 1990-1994[2].

GLOBAL ISSUE

World blindness has become a global problem but without a global solution. The task of eradication is difficult and is different in the various countries of the developing world. Each country has its own problems requiring its own specific solutions.

PREVENTION OF BLINDNESS

There are numerous organisations which recognise world blindness as a global problem requiring specific individual solutions and which are engaged in the prevention of blindness (POB or PBL), eg:

1. National – Singapore Society of Ophthalmology (SSO)
2. Regional – Asia-Pacific Academy of Ophthalmology (APAO)
3 International – International Agency for the Prevention of Blindness (IAPB)

I shall elaborate on the IAPB organisation further because it is perhaps the best known.

IAPB

Founded on the first day of January 1975 to foster universal cooperation against "avoidable" blindness (ie blindness world-wide that is curable or avoidable), the IAPB is a consortium of non-governmental organisations (NGOs), national POB committees, and the WHO, with a common aim: "to promote public awareness, utilise resources and support sight-conservation programmes" through the implementation of WHO's health care strategies.

IAPB Infrastructure

1. More than 100 national POB committees
2. WHO/POB technological expertise
3. Ophthalmological professions
4. UN agencies
5. Government and NGOs

IAPB's key role

1. Providing an environment for information exchange.
2. Coordinating, facilitating and strengthening national POB programmes.

IAPB achievements

In the 20 years of its existence, IAPB has held Five General Assemblies (quadrennially) in the main continents and has gathered an enormous amount of data on POB.

IAPB priorities

IAPB has identified the following needs:

1. High value, good quality cataract surgery.
2. Deliver essential eye medications and treat ocular infections endemic in the Third World.
3. Prevent nutritional blindness in children by vitamin A supplement.
4. Train and equip ophthalmic personnel to deliver essential eye care services and their maintenance.

IAPB limitations

1. IAPB has recognised that cataract blindness is high on its priority list but inspite of its programme, cataract blindness remains the major blindness in the Third World.[3]
2. For cataract and its other programmes to succeed, IAPB also recognised that there must be political will and a commitment from individual nations.

HEREIN LIES THE DIFFICULTY

Because the first constraint lies within the recipient country, (mostly a function of inertia), IAPB together with WHO convened a meeting at the headquarters of the NGO Christoffel Blindenmission in Germany in November 1994 to examine existing national POB committees along the following guidelines:

National POB Guidelines

1. Scope and purpose
2. Composition and work methods
3. Review of present situation
4. Identification of needs
5. Priorities for actions

ADOPTION OF NATIONAL COMMITTEES

Following that workshop, the Royal College of Ophthalmologists (UK), which is a regulating body for the profession, met with IAPB/WHO to consider establishing a national POB committee for the UK, as none exists even there.

IS THERE A NEED FOR A NATIONAL POB COMMITTEE?

The answer must necessarily depend on the needs of each individual country.

I cannot speak about the countries around us in the Asia Pacific, but I can describe our experience in Singapore.

POB IN SINGAPORE

There is as yet no official POB committee in Singapore. In the past, POB activities were undertaken on an ad hoc basis by various groups, eg:

1. Straits Settlement Government, 1946
2. Singapore Association for the Blind, 1951
3. Ministry of Health, 1956
4. Society of Ophthalmology (SMA) (POB Subcommittee), 1963
5. APAO, 1968
6. Singapore Eye Foundation, 1983
7. IAPB Regional Assembly, 1985
8. Various Community Centres Annual Screening, 1985
9. The Teaching Institutions, viz NUS, SNEC, 1986
10. Singapore Visioncare Programme, 1990

A NATIONAL COMMITTEE

A national POB committee can replace the abovementioned organisations, but it must necessarily be high-powered, appointed by government, chaired by a high-profile figure, and include all the organisations that are presently involved with POB in the country.

Such a powerful committee can move things. For example, it can straightaway review the present status of the registration of blindness in Singapore and implement improvements.

PRESENT LIMITATIONS ON BLIND REGISTRATION

1. Under registration.
2. Limitation in aetiology by site and type of affection.
3. Monocular blindness is not registered.

Under Registration

Blind registration is not presently required by law. Persons are registered as blind only when they are referred to a government

institution for that purpose.

The implication may be made that blindness in the more affluent (those who consult ophthalmologists in the private sector) may not be many. This may be so in the past, but with rising affluence and longevity, diabetic retinopathy and age-related maculopathy are now commonplace.

Suggestions to overcome under registration

1. List of "registered" blind: (for those who need social aid/ motility training)
2. Additional list of "notified" blind: (for those who wish to avoid stigma or other reasons)

This will achieve a more realistic incidence.

Limitations on classification

The present classification based on aetiology and by site and type, probably adopted from Sorsby, is now inadequate.

Present Classification

Group	Cause
I	Congenital and developmental
II	Corneal diseases
III	Uveitis
IV	Other inflammation involving uvea (panophthalmitis, endophthalmitis, phthisis, atrophy)
V	Retinal degeneration (including myopia and detachment)
VI	Cataract
VII	Glaucoma
VIII	Optic atrophy (excluding those due to glaucoma)
IX	Trauma
X	Tumours

Further subgrouping is required, eg.

For Group V: Retinal

Retinal : Age-related maculopathy
Diabetic retinopathy
Retinitis pigmentosa
Myopic degeneration
Detached retina
Retinal degeneration
Maculopathy

For Group I : Congenital

Congenital: Congenital cataract
Congenital nystagmus
Macular dystrophy
Bilateral optic disc hypoplasia
Retinopathy of prematurity
Severe choroidal degeneration
Strabismus
Microphthalmus
Congenital glaucoma
Marfan's syndrome

These subgroups are not in the original classification but registering doctors have been putting in the extra entries.

Monocular blindness

Blindness in one eye from industrial or road traffic accidents is presently not registered, but may be of economic significance later when monocular blindness increases.

REGIONAL APPLICATION

If we can determine a better classification, we can offer this classification for the region, as different countries classify blindness differently, and we need a common denominator for comparison purposes.

RANKING CAUSE OF BLINDNESS LOCALLY

Singapore has one of the highest prevalence of diabetes mellitis patients in the world, with an estimated 11.4% of the population aged between 18 and 69 (164,000 people) in 1994 suffering from diabetes.

A national committee can direct its attention to this new trend in blindness. However, recognising the problem that exists, the Singapore National Eye Centre has already started diabetic retinopathy screening with fundus photography at the major community centres.

PRESENT PROBLEMS

Thus, apart from retinal disease and congenital blindness (problems at the two extremes of life), POB is not a priority health problem in Singapore.

Singapore has one of the lowest prevalences of blindness in the world (currently at 55 per 100,000).

It has been said that only Singapore (apart from the Vatican) does not have a rural population and thus has been spared the horrors of blindness in the Third World.

Do we, therefore, need a national POB committee, or shall we allow the status quo to continue with perhaps the Singapore Society of Ophthalmology playing a coordinating role through its POB subcommittee?

DONOR NATION

The fact is that Singapore has, somewhere along the way, become a "donor" nation in POB activities.

1. Providing a first class service for the country and the region.
2. Providing teaching programmes:
   * Nationally
   * Regionally
   * Internationally
3. Embarking on tackling cataract blindness at source,
   * Tianjin Intraocular Implant Training Centre
   * World Cataract Surgeons Society (WORLDCATS)

INDIVIDUAL AND NATIONAL COMMITMENT

But whether we can succeed, in whatever capacity, will depend on ourselves, for at the end of the day, only I exist - I alone and one with the universe – and we have to find our fulfilment within ourselves.

Each one of us is, in a manner of speaking, closer to POB than we realise. This very seminar and discussion is one such example.

Just as every individual has a contribution to make towards POB, so a national consciousness that involves every ophthalmologist will be more effective, whether it be through your national POB committee, or WORLDCATS, or other organised groups.

The only requirement is that such an organisation needs commitment and must have a strong leadership to be effective.

CONCLUSION

There never was nor will ever be an easy solution to POB, but unless we start with ourselves and at our own doorsteps, world blindness, after all is said and done, will remain a major world disaster.

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