Oration of the 5th Academic Sessions

Fighting for sight through community eye care in Southern Sri Lanka

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Sight is a gift of nature for all living creatures including humans. If sight is affected it will cause profound human and socio-economic consequences in all societies. The cost of lost productivity, rehabilitation and education of the blind is a significant economic burden particularly in many developing countries such as Sri Lanka. Above all it is an intense human suffering. Therefore prevention of blindness and care for the people with low vision, or fighting for sight can make enormous savings and facilitate societal developments as well as reduction of human suffering.

Furthermore, blindness is often associated with low life expectancy. Blindness can be eliminated from the face of the earth if people world wide have access to sight saving medical and surgical techniques, and if there is a process to improve primary eye care and eye health to prevent ocular conditions that lead to loss of sight.

The world scenario

There are 45 million blind people and 135 million with low vision, comprising a total of nearly 180 million people with some degrees of significant visual impairment. There are at least 9 million blind people in India, 6 million in China, and 7 million in Africa. Altogether these figures constitute half the global burden of blindness. People who live in the developing countries are 5 – 10 times more likely to go blind than people who live in the developed countries.

Eighty percent (80%) of world blindness is avoidable. The global priorities in a programme for eliminating avoidable blindness are curing cataracts, eye infections (Trachoma and onchocenciasis mainly), visual loss in children, correction of refractive errors and low vision.

Other preventable or treatable causes of visual loss such as diabetic retinopathy and glaucoma can be included on a country by country basis as determined by the local situation.

It is estimated that at least 7 million people become blind each year and one person in our world goes blind every 5 seconds and a child goes blind every minute. If national and international efforts to avert blindness are not intensified the number of people with severe visual disability will increase to above 75 million by the year 2020.

Sri Lankan perspectives

Sri Lanka is an island of approximately 65, 000 square km. Its estimated population in the year 2005 is 19, 668,000. Life expectancy at birth is 73 years, Sex ratio is 98 males per 100 females.

Population distribution by age.

Table 1 Age distribution

Age	No.
0 – 14 yrs	4.4 million
15 – 64 yrs	11.4 million
> 65 yrs	1.1 million

The prevalence of blindness (based on a survey conducted by Eye Care Sri Lanka in 20 out of 24 districts) is nearly 0.5% and 66% of total blindness is due to cataracts. The incidence of cataract is approximately 50, 000 eyes/year.

The other causes for blindness and low vision are,

1. Trauma
2. Uncorrected refracted errors
3. Infections
4. Glaucoma
5. Diabetic Retinopathy
6. Congenital defects

The exact prevalence or incidence values for the above conditions in the country are yet to discover. There is a cataract back log today. To reduce it, it is necessary to have a cataract surgical rate higher than the incidence of operable cataracts. This is a difficult task with an inadequate number of ophthalmologists around the country. The 2000 odd ophthalmic beds in the government sector are quite insufficient.

Primary eye care services

It is clear that the countries that have a strong primary care orientation have more equitable healthy outcomes than those which have specialty care orientation. Primary care is defined as an array of basic services that are accessible and acceptable to the people comprehensive and coordinated at affordable costs. In the implementation of primary health care services primary eye care practices play a major role. Primary eye care activities cover the following two areas of community health services.

1. Clinical service component.
2. Eye health protection and promotion component.

1. Clinical Service component

From the point of view of public health, all common eye disorders in individual communities require simple but adequate treatment irrespective of whether it is blinding or not.

2. Eye Health Protection and promotion of component

Community Ophthalmology is a discipline that adopts protection and promotion of eye health through primary eye care in the prevention of the blinding and disabling ophthalmic conditions.

Community ophthalmology centre

In providing primary eye care to the people of Southern Province of Sri Lanka a community ophthalmology centre was established for the first time in Sri Lanka in the Department of Community Medicine of the University of Ruhuna in the year 2001.

Community Ophthalmology is presently not an established discipline in Sri Lanka. India, Pakistan, Nepal and Thailand have well established Community Ophthalmology Centers throughout their countries.

The need of Community Ophthalmology in Sri Lanka was identified and published by the author in the *Journal of College of Ophthalmologist of Sri Lanka in 2005*. The paper highlighted the importance of having Community Ophthalmology as a separate discipline to improve the preventive, promotive and rehabilitative aspects of eye care in Sri Lanka.

Activities of community ophthalmology centre of University of Ruhuna

1. Examine the problems of blindness and visual impairment from the perspective of the community.
2. Investigate the size of the problems.
3. Find the causes – community diagnosis
4. Conduct screening programmes.
5. Provide basic curative services.
6. Study the attitudes of people towards eye care.
7. Carry out community-based rehabilitation and research.
8. Training of volunteers and staff.
9. Disseminate health education.

Why it is necessary to have community ophthalmology centre?

1. Every body with an eye disease does not attend a busy eye clinic.
2. There may be vision threatening conditions unnoticed.
3. There is no easy access to eye care services in Sri Lanka.
4. There is no proper education on eye diseases.

Different ways of achieving targets

1.Conduct basic eye care camps in rural and remote areas. These camps are organized by volunteers through the centre.

Activities of eye camps

(i) Perform eye examinations and treat cases with defects
(ii) Perform referrals to secondary or tertiary centers
(iii) Carry out refractions and issue prescriptions for spectacles
(iv) Select cases for surgeries.

A paper titled "Monitoring and effectivity assessment of eye camps in Southern Sri Lanka was published by the author on the findings of such activities in the *Journal of Galle Medical Association in September 2003* (vol. 4 no.1). Analyzed the activities of eye camps conducted by the Community Ophthalmology Centre from September 2002 to March 2003.

Table 2 Eye camps (c) conducted (Location and number attended)

Eye camp	No. attended
C - 1 Manampita	74
C- 2 Kamburupitiya	163
C - 3 Kottawa	117
C - 4 Ahangamgoda	270
C - 5 Uswewa	142
Total	766

Table 3 Demographic details

Sex	No.
Male	309
Female	457
Total	766

Table 4 Age structure

Age	No.
0 – 10	27
11 – 20	60
21 – 30	32
31 – 40	65
41 – 50	205
51 – 60	183
61 – 70	108
71 – 80	72
Above 81	14
Total	766

This paper highlighted the importance of evaluating the camp activities by self assigning value (performance units) to each activity of the camp. The total number of units achieved in a camp is used to find the effectiveness of each camp as well as for evaluating the outreach work of the community ophthalmology center for a given period.

Indicators suggested	**Performance in units**
1. Patient examination	
(A) 20 patient examinations and treatment (Vision checking, anterior segment, examination, Funduscopy)	1 unit
(B) 5 refractions (Dry / cycloplegic)	1 unit
(C) 20 IOP checking	1 unit
(D) 10 cataract referrals for surgery	1 unit
(E) 30 referrals to base for follow up / investigation	1 unit

2. Interventions at the camp / base

(A) 5 removal of superficial foreign bodies — 1 unit
(B) 5 any other minor procedure — 1 unit
(C) 1 cataract extraction at the camp — 1 unit
(D) 2 cataract extraction at the base — 1 unit
(E) 10 investigations and follow up at the base — 1 unit

3. Screening procedures only

(A) 50 school children — 1 unit
(B) 50 community members — 1 unit

4. Health education

(A) 25 people given education (lectures/leaflets/posters) — 1 unit
(B) 1 film show / video presentation — 1 unit

5. Rehabilitation

(A) Rehabilitation of 1 blind patient — 1 unit

Table 5 Analysis of camp activities and earned unit values

Activity	Camp					Total no.	Total no.	Total units earned
	C - 1	C - 2	C - 3	C - 4	C - 5			
Medical treatment at the camp	06	33	17	28	24	108	14.0	
Achieved unit value	0.3	1.65	0.85	1.40	1.2			5.4
Refraction at the camp	03	51	40	111	70	280	36.5	
Achieved unit value	106	10.2	8.0	22.2	14.0			56.0
NAD	02	01	01	08	03	15	1.9	
Referred for surgery	07	35	18	43	20	123	16.0	
Achieved unit value	0.7	3.5	1.8	4.3	2.0			12.3
Referred fro further examination	51	43	41	80	25	240	31.3	
Achieved unit value	1.7	1.4	1.3	2.6	0.8			8.0
IOP checking	-	90	-	148	24	-		
Achieved unit value		4.5		7.4	1.2			13.1
Total number	74	163	117	270	142	766		
Total units achieved	4.3	21.3	12.0	38.0	19.2			94.8

Activities of the Community Ophthalmology Centre on follow up activities also can be assigned with set numerical values to evaluate the work at the base

Table 6 Analysis of activities at the base and earned unit values

Event	1	2	3	4	5	Total no.	%	Total Unit
Cataract surgeries performed	2	19	4	8	2	35	28.4	17.5
Unit value	1.0	9.5	2.0	4.0	1		(n= 123)	
Followed up at the clinic	27	2.0	22	26	2	79	32.9	7.9
Unit value	2.7	0.2	2.2	2.6	0.2		(n=240))	
Total number	29	21	26	34	4	114	31.4	
Total units achieved	3.7	9.7	4.2	6.6	1.2			25.4

The Community Ophthalmology Centre whilst doing its outreach services suggests a method for self evaluation of outreach activities.

2. Screening for eye diseases

The Community Ophthalmology Centre performed continued screening programmes to detect eye diseases among different sub populations in the southern province. e.g. school children study. This study was published in the *Journal of College of Ophthalmologists of Sri Lanka in 2005.* (vol. 11 – No. 2).

A Visual screening programme was conducted on 1722 teenage school children in a random selection of schools in Southern Province where 35.5% of them were detected having ocular problems, 3% were treated at schools and 34.5% were referred for further diagnosis and management.

In the analysis it was found that the prevalence of ocular anomalies among teenagers was 25.9% inclusive of 8.5% refractive errors and 17.4% non-refractive type ocular anomalies. Of the total 8.5% refractive errors, 7.4% were newly detected at the screening procedure. The most common complaint by the teenagers without refractive errors were calculated as

photophobia and tearing among 29.0%
headache and pain in the eyes among 18.6%
and prevalence of convergence defect was 6.9%.

3. Epidemiological Surveys

The Community Ophthalmology Centre of the University of Ruhuna performed epidemiological surveys to detect visual problems in adult rural population of Southern Sri Lanka. A two stage descriptive epidemiological survey was performed in a defined population of rural adults above the age of 20 years to detect their visual problem. All identified cases were referred and treated at this Centre. This was published in a paper in the *Journal of College of Ophthalmologist of Sri Lanka* (vol.8, No. 1) in 2002.

Table 7 Different types of visual complaints identified and analyzed

Type of complaint	%
Poor distant vision	12.8
Difficulty in reading	21.9
Tearing	13.0
Photophobia	0.3
Irritation of eyes	1.3
Pain	0.6
Vague complaints	2.0
Total	51.9

The duration of the symptoms and whether they received any kind of treatment was analysed.

Table 8 Duration of the symptoms

Duration of symptoms	%
> One month	46.5
< One month	53.5

Of those who had 51.9% of ocular complaints only 14.1% were able to obtain some kind of treatment.

Table 9 Type of Treatment obtained

Type of Treatment obtained	%
Western	12.9
Ayurveda / Home remedy	1.6
No treatment	85.9

This indicates the pattern in which visual problems receive treatment.

Table 10 Different types of diseases identified in the study were as follows

Disease	%
Refractive errors including presbiopia	28.8
Media opacities	4.8
Disc pallor	0.3
Infections	0.6
Age related macular degeneration	1.3
Glaucoma	0.2
NLD obstruction	0.5
Diabetic retinopathy	0.2
Amblyopia	0.5
Pterygium / Episcleritis	0.8
Allergic conditions	0.6
Convergence deficiency	0.3
Total	38.9

It was discovered that 0.3% had multiple pathologies; and the majority had refractive defects; and only 10.1% had non-refractive related diseases.

Refractive errors

In this analysis presbyopia has been considered as a separate entity.

Table 11 Refractive errors

Refractive errors	%
Bilateral	22.8 (142)
Unilateral	3.2 (20)
Total	26.0 (162)

A statistically significant proportion of refractive errors was shown among the >40-age group (Chi square test, $p<0.01$).

Table 12 Types of Refractive Errors (RE) identified

Type	% of total RE n= 309 eyes	Prevalence n= 1244 eyes
Simple myopia	12.0	3.0
Simple hypermetropia	59.4	14.7
Myopic astigmatism	13.0	3.2
Hy. Astigmatism	6.4	1.6
Comp. My. Astigmatism	4.2	1.0
Comp. Hy. Astigmatism	2.5	0.6
Mixed Astigmatism	2.5	0.6
Total	100	24.7

Media opacities observed were as follows. Media opacities were observed in 4.8% (30).

Table 13 Type of media opacity

Type of media opacity	%
Mature cataract	1.9
Immature cataract	2.6
Corneal scar	0.3
Total	4.8

In this study it was attempted to find out different levels of visual acuity loss among the rural adult population as defined by WHO.

Table 14 Visual acuity of those with eye diseases

VA	R/Eye	L/Eye	Total	Prevalence
6/18 - Better	142	126	268(55.3%)	21.5%
6/18 - 6/60	76	83	159(32.8%)	12.8%
6/60 - 3/60	21	23	44(9.0%)	3.5%
3/60 - 1/60	02	02	04(0.8%)	0.3%
1/60 – PL	01	01	02(0.4%)	0.2%
NPL	00	07	07(1.4%)	0.6%
Total	42	242	484	

4. On-site clinics

On-site clinic is another important event the Community Ophthalmology Centre is presently engaged with. Important community establishments such as pre schools MCH clinics and elderly homes are visited with prior notice to examine the visual status of their inhabitants. Recently a selection of 15 elderly homes scattered throughout the Southern Province was visited by the CCC in order to carry out on site clinics. All inmates were examined for visual problems. The findings of this survey were presented at the Fourth Academic Sessions of University of Ruhuna last year (Proceedings). Findings of this paper highlighted the following visual acuity defects.

Table 15 Visual Acuity levels of elderly home inmates

Age	%
> 6/12- 6/60	38.5
> 6/60 - 3/60	22.6
> 3/60 (Blind)	8.8

Table 16 Functional capacity affected by eye sight

	%
Difficult to attend to day to day work due to visual problems	49.2
Visual Acuity is adequate only to walk around	29.6

Table 17 Assessment of blinding visual problems

	%
Cataract (curable)	45.6
Age related macula degeneration	2.7
Refractive errors	27.6

This study highlighted the age-related visual problems in Southern Sri Lanka. Ageing is a continuous process of progressive change in the biological, psychological, and social structures of a person with different types of unmet needs. Visual restoration is one of the important aspects that has been neglected among the aged mostly due to various problems faced by those who look after the elderly.

Table 18 Curative and promotive services provided by the C>mmunity Ophthalmology Centre

	2002	2003	2004	2005	2006	2007
Patients examined and treated at the center after screening	965	744	891	444	791	836
Training programmes conducted	01	01	01	02	01	03
Surgeries(cataract)	366	327	303	231	162	126

All these cataract surgeries were performed as initiated under the services of the Community Ophthalmology Centre. Patients selected from the screening programmes had all come from the under privileged sectors of society. These surgeries were performed at a specially designed non profit making eye unit organized by a private sector institution completely free of charge or for a very low cost depending on the financial situation of the patient. Incorporating the private sector in this kind of services is another topic that deserves consideration today.

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