

Editorial

Community ophthalmology: from darkness to light

“There is no better way to thank God for your sight than by giving a helping hand for someone in dark.”

Dr Nahata MC, M.B.B.S; D.O.M.S.; M.S. (Ophthalmology)
Former Prof and Head Department Of Ophthalmology M.G.M. Medical College, Indore
(M.P) India
Email: manaknahata@hotmail.com

Introduction

Community ophthalmology deals with all aspects of vision covering a wide range of fields for work – Prevention of blindness, conservation of sight, social service, promotion of employment, rehabilitation and recreation of the blind.

Community ophthalmology is attracting the attention of ophthalmic world. This delivery of eye care involves preventive, curative, promotive and rehabilitative activities incorporating basic clinical and public health sciences in all its dimensions. It highlights the realignment from individualized care to community based eye care services. Community ophthalmology is seen as a health management approach in preventing eye diseases, lowering eye morbidity or eye morbidity rates and promoting eye health through active community participation at the ground level. Comprehensive eye care services must start where people live and work and such is the thrust of community ophthalmology. Prevention and promotion should begin amongst the people.

The eye healthcare is evolving into one of the most challenging areas in public health. It is a holistic approach to prevent visual impairment and ocular morbidity in the community (Rondaris, 2009). Community ophthalmology has many synonyms such as Preventive Ophthalmology or Public Health Ophthalmology but has a singular objective of improving ocular health of the community by therapeutic and surgical interventions with active community participation. It prevents not only the visual loss but also improves the quality of life.

Magnitude of the problem of blindness

The problem of blindness is universal, but the magnitude varies from region to region based on the economic status, awareness, infrastructure, availability of facilities including manpower.

WHO in the year 2010 estimated that approximately 285 million people of the world were visually impaired and 39 million were blind (WHO, 2014). Visual impairment is more common in amongst older age group. Legal blindness is frequently seen in people above the age of 60 years. Childhood blindness remains a gigantic problem with an estimated 1.4 million blindness children below the age of 15 years. The child has to spend many years in blindness (blind years) resulting in personal, family and national economic loss.

Causes of blindness

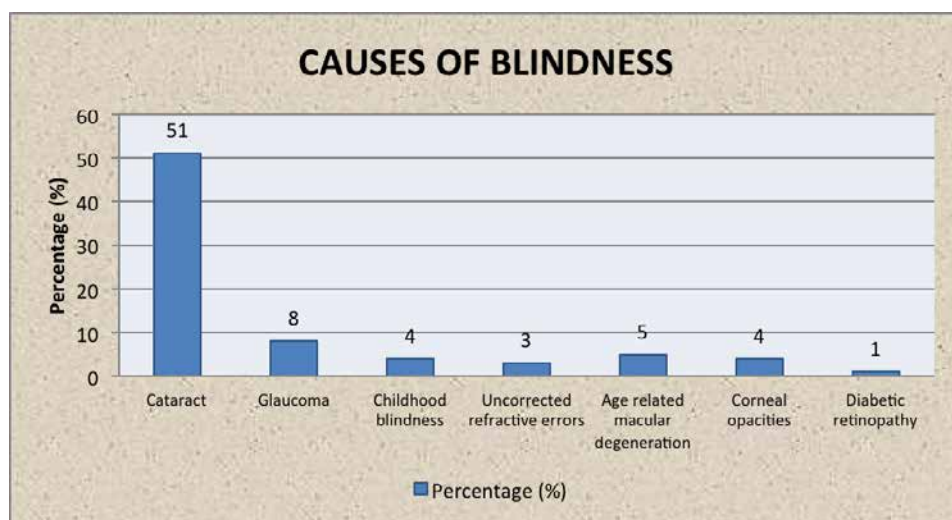
• Risk factors

A number of risk factors such as genetic mutation, aging, sanitation, water supply, environmental degradation, dietetic factors influence the incidence of eye diseases. Smoking, tobacco chewing, consumption of alcohol, passive lifestyle, myths, religious beliefs or taboos cause blindness and visual impairment. Low standard of personal hygiene and ill health have a tremendous impact on the occurrence and severity of eye diseases. Women are more prone to develop blindness as compared to men because they have relatively lower level of health consciousness.

Almost all surveys indicate that prevalence of blindness is high in people with low income settings and lower social status. Non-availability of ophthalmic services in rural and tribal segments and non-affordability of treatment are major factors of impairment of vision. Awareness creation and service provision could become the key to overcome these obstacles and play a vital role in eliminating blindness and visual impairment.

The causes and factors responsible of blindness show great regional variations. The incidence of trachoma, conjunctivitis, xerophthalmia is high in third-world countries. Developmental anomalies, cataract, diabetic retinopathy and age-related macular degeneration (AMD) largely contribute to visual impairment in developed countries. The percentage of cataract blindness shows variation from 30-80%. The global causes of blindness are given in the following table and depicted using bar-graph:

Causes	Percentage
Cataract	51%
Glaucoma	8%
Childhood blindness	4%
Uncorrected refractive errors	3%
Age related macular degeneration	5%
Corneal opacities	4%
Diabetic retinopathy	1%



Cataract:

Cataract is responsible for 51% of blindness worldwide (WHO, 2014). It is also responsible for low vision.

Glaucoma:

Glaucoma is responsible for 8% of the world's blindness. It appears to be on a lower side. The percentage of blindness caused by glaucoma cited in literature ranges from 12-15%. Glaucoma (POAG) shows genetic predisposition.

Childhood blindness:

The prevalence of childhood blindness in developing countries is estimated as high as 1.5/1000. It is 0.3/1000 in developed countries. It brings the number of blind children to around 1.4 million. The common causes of blindness in children being corneal scarring, vitamin A deficiency, retinopathy of prematurity, congenital abnormalities such as cataract, glaucoma and hereditary retinal dystrophies.

Uncorrected refractive errors (42%):

It is the most leading cause of visual impairment (Pascolini & Mariotti, 2012). Out of the 19 million children who are visually impaired, refractive errors is responsible for impairing the vision of 12 million.

Age related macular degeneration:

Globally, age-related macular degeneration (AMD) ranks as third important cause of blindness. It predominantly affects the central vision and patient feels difficulty in reading and skilled work.

Corneal opacities:

Corneal scarring is the 4th important cause of blindness. Trachoma, xerophthalmia, keratitis / corneal ulcer and ocular trauma are major causes of corneal opacities or corneal blindness.

Diabetic retinopathy

Diabetic retinopathy is responsible for about 5% of blindness. There is growing evidence to suggest that the incidence of diabetes is increasing each year. Therefore, the number of blind due to diabetic retinopathy is bound to rise.

How to combat blindness

The problem of blindness is gigantic and it seems impossible to eliminate all types of blindness in a short period. Fortunately, 80% of the blindness is avoidable. Therefore, blinding diseases should be controlled on priority. Vision 2020 "Right to Sight" was launched by the WHO in early 1999. It is a collaborative effort between WHO and a number of partners – Governmental and non-governmental organizations, professional bodies and institutions to eliminate avoidable blindness by the year 2020. Vision 2020 includes three major components as target activities: Specific disease control, Human resource development; and infrastructure & technology development. The blindness can be significantly reduced by adopting the eye health promotional, preventive, curative and rehabilitative approaches.



The PRAYAS program initiated for elimination of blindness and visual impairment was started by the author in the year 2012 advocating attention to refractive errors, malnutrition and corneal blindness – eye donation and corneal grafting in the tribal and rural population. This program targets pediatric and geriatric population with community participation.

Elimination of blindness and visual impairment in tribal and rural segment needs special attention, which will be possible only with active participation of the community at large.

It is suggested that if PRAYAS program is adopted as supplement to Vision 2020, can assist significantly in elimination of the visual problems.

The problem of non-availability of donor eyes (cornea) for keratoplasty can be eliminated instantaneously if eyes are removed from the postmortems done in cases of death due to road accident. According to a report of the WHO in the year 2013 1.25 million people died in road accidents.

Selection of proper recipients for corneal transplantation, availability of trained corneal surgeons and properly managed eye-banks will have to be ensured.

The eye health promotion program involves a combination of three activities: Health education directed at personal improvement in eye care, increased adoption of prevention behaviors repelling misconception and dogmas from the societies and informing people about improvement in health services in the community. Health education in the community may be disseminated through school programs, talks, films and posters. In educational institutions if competitions, if held, like poster, slogan and essay writing on subjects connected with problems of eyes and prevention of blindness by the students will be a good mode of awareness generation and increased consciousness. School teachers may be trained in basic health education to make the community health conscious.

Preventive activities, control of trachoma (which is on way) and conjunctivitis, prophylaxis for xerophthalmia, protective measures against ocular trauma specially avoidance of use of crackers (in festivals) and spurious drugs. Cataract cannot be prevented. However, protection from ultraviolet rays and stoppage of cigarette smoking may delay its development. Uncontrolled diabetes mellitus enhances its early maturity. It is claimed that strict glycemic control may slow down the progress of AMD. We hope that the day the medical treatment of cataract becomes known, a big battle will be won – of course, it requires commitment, determination and strong will power to achieve the objective. Early detection and normalization of intraocular pressure by medical or surgical treatment will prevent glaucomatous blindness. It is also included in the list of priority eye diseases.

Cataract:

The curative or surgical approach is very effective in restoring the vision in patients with cataract. Considering the huge backlog and high prevalence of cataract it is kept in priority eye diseases in Vision 2020. The target for cataract surgery is being

increased each year and it is planned to perform 32 million operations in the year 2020 to reduce the burden of cataract blindness (Vision, 2020) The quality of cataract surgery is tremendously improved with self-sealing incision and implantation of IOLs even in eye camp. It often eliminates the need of postoperative distant glasses.

Refractive errors

The refractive errors are the most common cause of visual impairment. Non-correction of errors can cause amblyopia. All school going children should be screened for refractive errors and spectacle correction should be provided to those who need it. Recent data suggest that there are 124 million people in the world who have low vision. In view of such a large number of subjects requiring assessment of refractive errors, it is advisable to use modality requiring less time (Smith, Weissberg & Trivision). Use of handy appliance like focometer will be of great help. It will be beneficial if a group of 3 works together viz. Ophthalmic surgeon, Optometrist and Optician for obvious reasons.

Focometer

With the increase in life span the number of people with low vision is on increase. While the low vision clinics are hardly available. Thus, it is suggested that one such centre for a population of 50 lacs be initiated where facilities for fitting the low vision aids are available.



Focometer

Childhood Blindness:

Since 2004, WHO and Lions Clubs International are working through their global net-work for preservation, restoration or rehabilitation of sight in children. The global project has benefited more than 150 million children in preventing avoidable childhood blindness (UNICEF, 1998). Early treatment of trachoma and vitamin A prophylaxis prevent sight loss. A group of ophthalmologist, pediatrician and obstetrician work in close coordination in providing proper counseling to avoid birth anomalies, congenital malformations and diseases of genetic origin.

Corneal blindness and Eye bank:

As per estimate there are 4.9 million bilaterally corneal blind persons worldwide. The sight of majority of them can be restored through corneal transplantation. Successful corneal grafting can reduce the global burden of corneal blindness, but lack of trained corneal surgeons and nurses, poorly equipped institutions, unreliable eye banks and inconsistent long term care may come in the way of corneal transplantation. Besides cornea being in short supply, some of the corneal blinds have to wait for a long time. Now under the new program a number of new eye banks are being established with trained manager and staff. The infrastructure for keratoplasty in district and medical college



hospitals are being strengthened. A wide publicity for promotion of eye donation with the introduction of hospital retrieval surgeons are likely to get good quality of cornea may change the scenario (Garg, Kishan & Gopinathan).

Development of human resources

A trained and dedicated staff is needed to control blindness. It is proposed to increase the strength of eye surgeons, optometrists, paramedical staff, nurses, ophthalmic technician and ophthalmic assistant or village level workers to man the new well equipped hospitals and service centers in the villages. Liberal supply of subsidized medicines, spectacles and low vision aid will go a long way to mitigate the sufferings of poor villagers.

Rehabilitation of blind

Most blind lead miserable life and become burden to family or society. Initially, a feeling of incompetence develops in a blind. Gradually, with the support of family, friends and community they try to overcome the calamity and adapt with the new situation. Blind schools are imparting training in mobility, Braille and different types of occupations. Government provides scholarships in education, reservations in jobs and free journey in trains. It is like a drop in ocean; much more is needed to instill confidence and joy in the life of a blind— such facilities be initiated in the private sector as well for ensuring availability of low vision aids, assistive devices, play and educational material — one manufacturing unit for every 100 million population should be setup, wherein facilities to manufacture all types of devices are available. There should be a provision of a Braille press and training school to train teachers.

Conclusion

- Presently, we are far behind achieving the target of VISION 2020. However, the progress made in combating global blindness is not disappointing. Adoption of PRAYAS program for tribal and rural segments as a supplement to Vision 2020 will be beneficial.
- Community is utilizing eye health care services even in remote villages, but needs enhancement.
- Loss of vision from trachoma, onchocerciasis and vitamin A deficiency has shown a significant decline due to effective primary eye care activities.
- The commitment of government, non-governmental organizations and international agencies is increasing in the control of blindness.
- The quality and success rate of cataract surgery has immensely improved.
- Impressive success in reduction of blindness in Gambia, India, Morocco, Nepal, Sri Lanka and Thailand has been reported.
- Over enthusiasm in one sector should not result in neglect of other blinding eye diseases.
- By joint cooperation and community participation we can curb the global blindness and take people from darkness to light.



References

Garg P, Krishna PV, Stratis AK, Gopinathan U (2005). The value of corneal transplantation in reducing blindness. *Eye (Lond)*; 19:1106-14.

Pascolini, D. & Mariotti, S.P. (2012) Global estimates of visual impairment. *Br J Ophthalmol*. 96:614-8.

Rondaris, M.V.A. (2009) *Community Ophthalmology*. *Philipp J Ophthalmol*; 34:1.

Smith, Kyla, Weissberg, Erik & Travison Thomas G. (2008) Alternative Methods of Refraction. A comparison of three techniques *Optometry & Vision Sciences*. 87,3 E176-182 PMID 20081549 March 2010

UNICEF (1998) Integration of vitamin A supplementation with immunization: policy and programme implications. Report of a meeting, 12–13 January, New York. Geneva, World Health Organization, 1998 (WHO/EPI/GEN/98.07).

VISION 2020: The RIGHT to SIGHT. WWW. aios.org/cme, series 9: PDS.

WHO (2014) Sheet No. 282, updated August.

Source of support: nil. Conflict of interest: none