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Survey of Low Vision and Blindness in Eye Centre in Jammu and Kashmir

Medical Science

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ABSTRACT

A retrospective survey of 4, 122 consecutive patient records of eye department was performed in an eye centre of a government hospital in Jammu and Kashmir providing free care . Data collected included age, gender, visual acuity after completion of treatment and diagnosis. 62.8% of the patients were male. After completion of treatment, 10.8% had low vision (best corrected visual acuity <6/18 to 3/60 in the better eye) and 2.6% were blind (best correct visual acuity <3/60 in the better eye). Most cases of low vision were found in the 50 to 70 year age group (42.8%). The most common visual acuity range after treatment amongst patients with vision loss was <6/18 to 6/60 (71%). The 5 main causes of low vision after treatment were glaucoma (16.0%), diabetic retinopathy (14.9%), and retinitis pigmentosa (12.3%), aphakic bullous keratopathy (10.2%) and Corneal opacity (10.2%). The 5 main causes of blindness were phthisis bulbi (47%), glaucoma (29.4%), optic atrophy (11.8%), uveitis (5.9%) & aphakic bullous keratopathy (5.9%). It is suggested that patients with low vision at the conclusion of treatment be referred to a visual rehabilitation centre. Referral should be made in cases with a best-corrected visual acuity <6/18 to 3/60 or with visual field loss to within 10° of fixation. Patients aged less than 50 years of age are expected to achieve maximal rehabilitation success. Motivation and vocational requirements should be assessed in older or more complex cases before referral. The data of this study shows that about 10% of patients seen at an eye hospital in India could benefit from low vision rehabilitation.

Introduction

It is estimated that there are approximately 18.7 million blind in India, which amounts to about one-fourth of all the blind people worldwide. The main causes of blindness were listed as cataract, uncorrected refractive errors, corneal opacities, and glaucoma. [1] With the increasing availability of ophthalmological services, this mountain of mostly treatable blindness is being vigorously attacked. However a significant number of patients either refuse treatment or do not attain normal or near normal vision following treatment. These patients constitute the visually impaired population. It has been observed that almost 90% of the so-called blind population do not have total loss of visual function, but retain a degree of useable residual vision.

Although there has been an increase in awareness of low-vision rehabilitation among eye-care professionals in India, concrete steps have not been taken to develop low-vision services. Eye-care professionals in the field have called for improvement of vision rehabilitation services in India for many years.[2-6] To plan appropriate and effective low-vision services, we need reliable and up-to-date information on low-vision patients in India. Such information is not readily available. To assess this need, a retrospective survey of patient files was done in a large regional eye hospital in India.

Material and method

4, 122 consecutive patient records of patients seen for the first time during the 1 year period from 01 Jan 2014 to 31 Dec 2014 were reviewed for this survey. No patient under the age of 3 years was included in the survey due to the inability to obtain useful visual acuity data. Patients were provided with a full range of optometric, medical or surgical treatment, as indicated for their diagnosis. Data obtained from the patient records included age, sex, diagnosis (single or multiple), and distance visual acuity in the better eye at the end of treatment. All data were coded to maintain patient confidentiality. The main cause of low vision in the better eye was recorded.

Recording of a single primary diagnosis was attempted wherever possible. However, multiple diagnoses were required in some instances. For example, an elderly patient with diabetes mellitus may be diagnosed with proliferative diabetic retinopathy, cataract, glaucoma, and retinal detachment. In a case such as this, the main causes of vision loss in the better eye were recorded.

Results

Treatment provided

The most common single treatment provided was surgery (33.5% of patients). The most common surgical procedures performed were cataract extraction (72.1% of surgeries), retinal procedures (17.0%), glaucoma procedures (7.3%), and penetrating keratoplasty (3.6%). Refraction of ammetropias and presbyopia (25.5% of patients) was the other main single treatment provided. It should be noted that refractions were also done on all patients being examined for the first time as a routine procedure and on most post-surgical patients. Non-surgical treatment (41.0% of patients) combines patients who were within normal limits, required medical treatment and/or advice, and patients who refused treatment.

Vision after Treatment (Table –1)

After completion of treatment of these 4,122 new patients, 86.6% had no visual impairment, 10.2% had low vision and 3.1% were blind.

Gender distribution

Of these 4,122 patients, 62.8% were male. Of the 552 patients with low vision, 60.3% were male. Of the 129 blind patients, 62.8% were male.

Age distribution (Table –2

The age distribution of the low vision group was a peaked curve with the greatest number of patients lying in the 50 to 70 year age group (42.8%). The age distribution of the blind group was similarly skewed with the greatest number of patients lying in the 50 to 70years old age group (43.3%).

Causes of visual impairment (Table-3)

The 5 most common causes of low vision were glaucoma (16.0%), diabetic retinopathy (14.9%), and retinitis pigmentosa (12.3%), aphakic bullous keratopathy (10.2%) and Corneal opacity (10.2%). The 5 most common causes of total

blindness were Phthisis bulbi (47%), glaucoma (29.4%), optic atrophy (11.8%), uveitis (5.9%) & aphakic bullous keratopathy (5.9%).

Characteristics of the low vision population (Table-4) The major causes of vision loss in children were congenital cataract, glaucoma and corneal opacity. Corneal opacity, glaucoma and cataract were the main causes of low vision in second decade. Diabetic retinopathy, retinitis pigmentosa, glaucoma & aphakic bullous keratopathy are the main causes of low vision in the age group of 21-70 years. Glaucoma & were the main causes of low vision in patients aged more than 70 years.

Discussion

The data showed that after completion of treatment 10.2% eye patients of our eye centre had low vision and 3.1% were blind. They were referred for low vision care. Relatively fewer females were referred. This needs to be investigated and referrals should be encouraged. However, among children both girls and boys nearly equally represented. This, we believe, could be due to increased awareness among parents. Almost half the patients were into the 0-30 year's age group. In our study, unlike most centres in the developed countries the elderly group (>60 years) represents a relatively small number. This could be either due to the low life expectancy of the Indian population and / or lack of access to low-vision services.[6,7] Retinal causes formed the major reason for referral to low-vision care; these include retinitis pigmentosa, macular degeneration, diabetic retinopathy and myopic degeneration. Hereditary eye disease (retinitis pigmentosa, heredomacular disease, achomatopsia, congenital eye anamolies and congenital cataract) was the other main cause of low vision. It is thought that consanguineous marriages, which are not uncommon in India, may contribute to these causes of low vision.

For most of the visually impaired, there is no prospect of curative treatment of the underlying pathology. It becomes incumbent upon the research community and the clinical and rehabilitation profession, to strive to enable people with low vision to perform tasks that are important at the work place or for daily living. This may mean supplementing visual abilities using low vision devices, and training. The data from this retrospective study showed that a significant number of low-vision patients needed careful refraction followed by standard prescription spectacles which are widely available at low cost.

The data of this survey show that a significant number of patients seen in an eye hospital fail to attain normal vision after thorough treatment. Of 4,122 consecutive patients, 423 had low vision, and 129 were blind after treatment. Low vision rehabilitation is indicated. Low vision rehabilitation is a multidisciplinary approach combining the skills of optometrists, mobility instructors, and schoolteachers. In this approach an optometrist first determines if magnification would improve the patient's ability to perform a desired task with a visual impairment. Magnification is usually provided by optical methods; for example by spectacles, magnifiers, or telescopes [7, 8] Non-optical near magnification of up to 20x can be obtained using a closed circuit television. Unfortunately, it is expensive (US$ 1,000). A cheaper hand held scanner (HeyeVision), which plugs into a home television is available in India from Wavelet (Pune) and may be more suitable if finances are restricted. Laptop computers are excellent aids for the visually impaired. The rapid development of computer technology for the visually impaired is very exciting. Another commonly used non-optical near magnifier is the photocopy machine. Almost limitless magnification is possible by using the enlarging feature found on most photocopiers. However the cost of photocopies stops this method being used extensively. Magnification at a distance is usually obtained by using telescopes. In low vision rehabilitation, monocular telescopes of 4x to 10x magnification are commonly used because of their lightweight.

In general, any person with a best corrected visual acuity between <6/18 and 3/60 will benefit from magnification at near and should be referred for low vision rehabilitation. However we should consider the age and motivation of many of these people. A significant number of people will be elderly with multiple handicaps and will have very little desire to go through the difficulties of re-learning how to see with a magnifier. If we wish to maximize the success of a newly established low vision service, we could focus on younger patients who are attempting to enter the workforce, are highly motivated, and are willing to re-learn how to read. For this reason, it is suggested that in a newly opened hospital based low vision service referral should occur for patients aged under 50 years and with a best corrected visual acuity between <6/18 to 3/60.

Using the survey data we find 4.8% of patients seen for the first time with low vision were under 50 years of age. This translates to a low vision referral rate of 2 to 3 patients per day. The most common conditions seen in children would be congenital cataract and retinitis pigmentosa. Retinitis pigmentosa would be the most common condition seen in the teenage and young adult groups.

Mobility is known to be decreased when the peripheral field constricts to within 10° of fixation.[7,8] To allow simplified mobility training, referral for mobility training should be considered when the peripheral visual field has constricted to within 15° from fixation. The main reasons for presentation for mobility training would be glaucoma and retinitis pigmentosa.

Yet, is it fair to refuse patients over 50 years of age access to the vision rehabilitation services? Obviously, the answer is no. However for this discussion we were considering a newly established hospital based low vision service with little experience and scarce resources. As the service grows, more difficult cases should be tackled. It is interesting to note that some workers in vision rehabilitation feel that referral is indicated when the best-corrected vision is 1/60 irrespective of age. [5]

RECOMMENDATIONS AND CONCLUSION

Some of the challenges and possible solutions in the delivery of low vision services in India are outlined below.

1. To incorporate into Primary Health Care and Primary Eye Care Programs, effective measures for the early identification and referral of those who may benefit from low- vision rehabilitation services.
2. To spread community awareness and public education.
3. To create awareness among health-care profes sionals through pre - and in-service levels of medical education to sensitize the medical community to the scope of low vision and to train them in making ap propriate refer rals to low-vision rehabilitation services.
4. To develop concerted efforts to eliminate any legal or other barriers that denies people with low vision access to educational and vocational services within their communities.
5. To adopt community-based rehabilitation to provide in

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struction to the low-vision person in his/her own environment.
6. To develop and harmonize standards for optical devices including the manufacture of spherical lenses.
7. To develop curricula to train various cadres of person nel involved in low-vision care.
8. To evaluate low-vision care in different settings to strengthen the case for development of appropriate service.

To develop effective quantitative and qualitative evaluation mechanisms that measure consumer satisfaction and the cost, cost effectiveness, and define clear outcome measures.

Table 1. Best corrected distance visual acuity in the better eye after treatment.

Classification Males Females Total Number (%) in each group			
No impairment (>6/18)	2,249 (63.0)	1,321(37.0)	3,570 (86.6)
Low vision			
Visual impairment (<6/18-6/60)	206 (58.9)	144 (41.1)	350 (8.5)
Severe visual impairment (<6/60-3/60)	51 (69.9)	22 (30.1)	73 (1.8)
Blind			
Blind (<3/60-PL)	76 (67.8)	36 (32.2)	112 (2.7)
Totally blind (no PL)	5 (29.4)	12 (70.6)	17 (0.4)
	2,587 (62.8)	1,535(37.2)	4,122(100.0)

Table 2. Age distribution of low vision and blind patients (N=552)

Age (Years)	Visual impaired (<6/18-6/60)	Severely Visual impaired (<6/60-3/60)	Total Low Vision (%) in each group (<6/18-3/60)	Blind (<3/60-PL)	Totally Blind (No PL)	All Blind (<3/60-No PL)
3-10	33	5	38 (8.4)	4	0	4 (3.8)
11-20	30	4	34 (7.6)	8	2	10 (9.6)
21-30	22	3	25 (5.6)	11	0	11 (10.6)
31-40	31	2	33 (7.4)	7	1	8 (7.7)
41-50	55	11	66 (14.7)	14	1	14 (13.5)
51-60	81	12	93 (20.8)	18	0	18 (17.3)
61-70	87	12	99 (22.0)	27	0	27 (26.0)
>70	52	8	60 (13.4)	1	11	12 (11.5)
Total 448 (100) 104 (100)						

Table 3. Causes of low vision and blindness

Diagnosis	Visual impaired (<6/18-6/60)	Severe Visual impaired (<6/60-3/60)	Total Low Vision (<6/18-3/60)	Blind (<3/60-PL)	Totally Blind (No PL)	All Blind (<3/60-No PL)
Cataract	25 (7.1)	15(20.5)	40 (9.4)	8 (7.1)	0	8 (6.2)
Glaucoma	61 (17.4)	7 (9.6)	68 (16.0)	16 (14.3)	5 (29.4)	21 (16.3)
Diabetes	55 (15.7)	8 (11.0)	63 (14.9)	17 (23.3)	0	17 (13.2)
Retinitis pigmentosa	43 (12.3)	9 (12.3)	52 (12.3)	15 (20.5)	0	15 (11.6)
Corneal opacity	38 (10.8)	5 (6.8)	43 (10.2)	15 (20.5)	0	15 (11.6)
Aphakic bullous keratopathy	35 (10.0)	8 (11.0)	43 (10.2)	10 (8.9)	1 (5.9)	11 (8.5)
Macular disease	24 (6.9)	7 (9.6)	31 (7.3)	4 (3.6)	0	4 (3.1)
Pseudophakic bullous keratopathy	22 (6.3)	3 (4.1)	25 (5.9)	4 (3.6)	0	4 (3.1)
Uveitis	17 (4.9)	1 (1.4)	18 (4.3)	7 (6.0)	1 (5.9)	8 (6.2)
Optic atrophy	9 (2.6)	5 (6.8)	14 (3.3)	5 (4.5)	2 (11.8)	7 (5.4)
High myopia	15 (4.3)	3 (4.1)	18 (4.3)	2 (1.8)	0	2 (1.6)
Corneal graft	4 (1.1)	1 (1.4)	5 (1.2)	5 (4.5)	0	5 (3.9)
Phthisis bulbi	0	0	0	0	8 (47.0)	8 (6.2)
Retinal detachment	2 (0.6)	1 (1.4)	3 (0.7)	4 (3.6)	0	4 (3.1)
Total	350 (100)	73 (100)	423(100)	112(100)	17(100)	129(100)

Table 4. Major causes of low vision and blindness with respect to age (n=552)

Diagnosis	Age (years)				
	3-10	11-20	21-50	51-70	>70
	Number (%) in each group				
Cataract	10 (23.8)	7 (15.9)	2 (1.3)	12 (5.0)	17 (23.6)
Glaucoma	8 (19.0)	7 (15.9)	20 (12.7)	33 (13.9)	21 (29.2)
Diabetes	0	0	29 (18.5)	43 (18.1)	8 (11.1)
Retinitis pigmentosa	0	0	29 (18.5)	37 (15.6)	1 (1.4)
Corneal opacity	6 (14.3)	9 (20.5)	15 (9.6)	23 (9.7)	5 (6.9)

Aphakic bullous keratopathy	0	0	18 (11.5)	28 (11.8)	8 (11.1)
Macular disease	8 (190)	9 (20.5)	7 (4.4)	9 (3.8)	2 (2.8)
Pseudophakic bullous keratopathy	0	1 (2.3)	11 (7.0)	14 (5.9)	3 (4.2)
Uveitis	4 (9.5)	4 (9.0)	7 (4.4)	10 (4.2)	1 (1.4)
Optic atrophy	4 (9.5)	3 (6.8)	5 (3.2)	7 (2.9)	2 (2.8)
High myopia	0	0	6 (3.8)	12 (5.1)	2 (2.8)
Corneal graft	0	0	5 (3.2)	4 (1.7)	1 (1.4)
Phthisis bulbi	1 (2.4)	2 (4.5)	2 (1.3)	2 (0.8)	1 (1.4)
Retinal detachment	1 (2.4)	2 (4.5)	1 (0.6)	1 (0.4)	2 (2.8)
Total	42 (100)	44 (100)	157 (100)	237 (100)	72 (100)

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