



ANALYSIS OF CAUSE OF BLINDNESS ON THE BASIS OF BLINDNESS CERTIFICATE IN TERTIARY CARE CENTRE IN INDIA

Ophthalmology

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ABSTRACT

PURPOSE: To analyse the cause of blindness on the basis of blindness certificate issued at tertiary care centre in India. In this study we aimed to analyse blindness certificates to find causes of visual impairment, handicap and blindness in a tertiary hospital of Rajasthan and discuss its usefulness in the context of public eye health and economic burden on government and society.

MATERIALS AND METHODS: A retrospective cohort study was done by secondary data analysis of 694 patients who were given blindness certificates during year 2014 to 2020. A detailed history taking and ophthalmological examination was done in all the patients who presented to the institute for obtaining the blindness certificate.

RESULTS: Pthysis Bulbi was the most common cause of blindness followed by optic atrophy across all age groups. Both anterior and posterior segment was involved in 56.34% of patients. Males were 75.64% and females were 24.36%. About 49% patients had 100% visual handicap while 29.39% patients had 40% visual handicap.

CONCLUSION: Study found that a significant number of males presented for obtaining the blindness certification as compared to females. Maximum number of patients belonged to the age group of 16 to 30 years. Significant number of patients (42.21%) had less than 40% visual handicap. As physicians it becomes our moral duty to provide the blindness handicap certificate to the deserving individual by thorough examination and investigation.

KEYWORDS

1.PL- Perception of light 2.PR- Projection of rays 3.FC-Finger counting

INTRODUCTION

Blindness as defined by national programme for control of blindness and visual impairment (NPCB) is Vision 6/60 or less with the best possible spectacle correction or Diminution of field of vision to 20 degree or worse in better eye. According to NPCB main causes of blindness in India are Cataract (62.6%), Refractive error (19.7%), Glaucoma (5.8%), Corneal pathology (0.9%) and others (11%).¹

Vision 2020: The Right to Sight, was a joint global initiative for the elimination of avoidable blindness by WHO and the International Agency for the prevention of blindness and has galvanised efforts to systematically eliminate avoidable blindness.² All across the globe, as the countries are progressing socioeconomically disease burden is shifting from communicable diseases to non-communicable diseases and age-related conditions. The ophthalmic diseases which are a part of this epidemiological transition are age-related cataract, age-related macular degeneration and diabetic retinopathy.³ Only few studies in India have analysed blindness and causes behind blindness and visual handicap.^{4,5}

In this study we aimed to analyse blindness certificates to find causes of visual impairment, handicap and blindness in a tertiary hospital of Rajasthan and discuss its usefulness in the context of public eye health and economic burden on government and society. The Ministry of social Justice and empowerment of government of India has given the guidelines for disability according to which the minimum degree of disability should be 40% for an individual to become eligible for any concessions or benefit being provided by the government of India.⁶ In India obtaining blindness certificate is a voluntary process which is responsible for under reporting of visually handicapped individuals.

Diseases of anterior segment responsible for blindness include keratoconus, micro cornea etc; those in posterior segment involved optic atrophy, retinitis pigmentosa, maculopathy, retinal detachment and retinopathy of prematurity. Total segment diseases are pthysis bulbi, pathological myopia, microphthalmos, amblyopia and others.

METHODS

It was a retrospective cohort study performed by secondary data analysis of medical records of 694 people who applied for blindness certificate between 1 January 2014 and 31 December 2020 performed at Tertiary health care centre. All applicants underwent thorough examination for visual acuity, anterior segment and posterior segment including tonometry and slit-lamp biomicroscopy. Investigations like B-Scan, computed tomography (CT), magnetic resonance imaging

(MRI), optical Coherence tomography (OCT) were done in whom it was required and final diagnosis was made after excluding avoidable causes of blindness before being sent to disability certification board of the hospital. Before final diagnosis required investigations like B-Scan, Computed tomography (CT) and Magnetic resonance imaging (MRI) were also done. For purpose of certification, Government of India guidelines were followed which says that disability should be assessed when the specialist is satisfied that further medical intervention is not likely to improve the state of impairment of patient.⁷ Blindness certificate would mean certificates with 40% and above of percentage, who are entitled to government benefits.^{7,8}

Table 1: categories of visual disability (according to NPCB)

Category	Better eye	Worse eye	Percentage impairment
0	6/9 to 6/18	6/24 to 6/36	20
I	6/18 to 6/6	6/60 to PL*	40
II	6/60 to 4/60 or field of vision 10° to 20°	3/60 to No PL*	75
III	6/60 to 4/60 or field of vision <10°	FC [#] 1 foot to no PL*	100
IV	FC [#] 1 foot to no PL* or field of vision < 10°	FC [#] 1 foot to no PL* or field of vision <10°	100
One eyed person	6/6	FC [#] 1 foot to no PL*	30

FC[#]: Finger counting PL*: perception of light

In this study, analysis was performed according to Visual impairment disability categories and percentages proposed by Government of India (category 0 - 4; 20-100%).

Category 0 included those with 20% Visual impairment (BCVA 6/9 to 6/18 in better eye). Categories 1-4 (40-100% disability) came under visual handicap. One eyed were given 30% disability percentage (vision in better eye - 6/6 and worse eye - finger counting 1 foot to no perception of light). Blindness was considered to be BCVA less than 6/60 or field of vision less than 20 degree in better eye. Categories 2-4 (75-100% disability) were considered blind. [Table 1]

We examined temporal, sex and age trends in blind patients with equal focus on all age groups. We also assessed various causes responsible for blindness by dividing them into anterior segment, posterior

segment and total segment diseases. We estimated the most common causes of Visual impairment overall (category 0-4; 20-100% disability). Through this, we could also know of other conditions in the eye that have become a public health problem.

RESULTS

The total number of applicants in our study were 694. Males were 75.64% and females were 24.36%. Maximum number of patients were in age group 16-30 years (36%). [Figure 1] According to segment of eye involved, Anterior segment was involved in 18.58% patients, Posterior segment was involved in 25.07% patients and both anterior and posterior segment was involved in 56.34% of patients. [Figure 2] About 56.34% patients had more than 70% handicap, 27.37% of patients had 31 to 40% handicap, 1.7% of patients had 41 to 70% handicap, 14.84% of patients had less than 30% handicap. P-value (0.0001) was highly significant for all age groups in handicap percentage 30-100; P-value for all age groups was significant for 20% visual handicap. Overall, Pthisis bulbi was the most common cause of blindness followed by Optic atrophy.

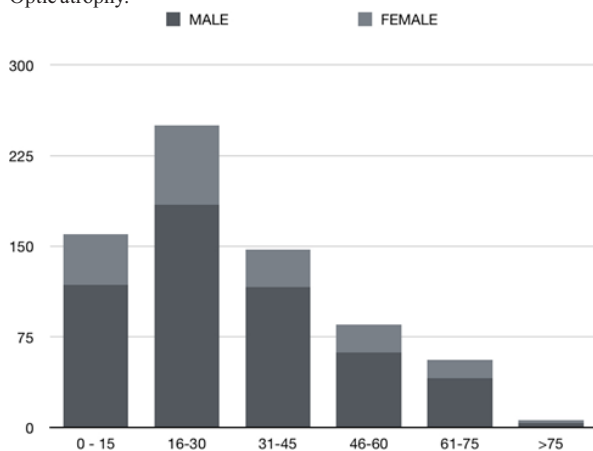


Figure 1: Age-wise distribution of blindness

● TOTAL SEGMENT ● POSTERIOR SEGMENT ● ANTERIOR SEGMENT

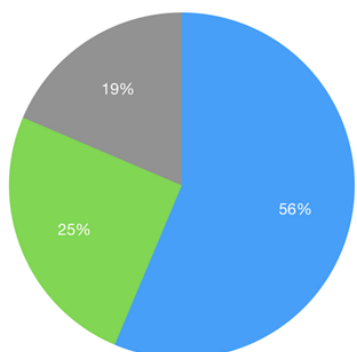


Figure 2: Distribution of blindness according to segment involved

Table 2: Distribution of Handicap percentage age-wise

Handicap percentage	Number of patients	0-15	16-30	31-45	46-60	61-75	>75	chi square value	P-value
<20	5	2	1	2	0	0	0	4.861	0.494
30	95	14	44	24	12	1	0	68.203	0.0001
40	204	34	103	37	16	13	1	146.176	0.0001
75	50	15	21	6	5	3	0	31.010	0.0001
100	340	85	81	78	52	39	5	78.004	0.0001
Total	150	250	147	85	56	6			

DISCUSSION

Disability certificates enable its recipients to avail a lot of benefits and help them to get reservation in colleges and jobs. They also get travel

concessions, income tax benefits and allowances on the basis of this certificate.^{6,7} Hence, there are many applicants for these certificates who are actually not legally eligible.⁷ Therefore it is both a responsible and difficult task to grant disability certificates to these people in need.

People with disability percentage of 40% are considered as handicapped and entitled to government benefits.^{6,7} it was noted that comparatively larger number of males than females applied for blindness certification because of their traditional roles in patriarchal society and more need of employment in our society.⁸

Overall, the most common cause of blindness/visual handicap was Pthisis Bulbi (15.73%) followed by optic atrophy (5.58%) across all age groups. A similar study of registered visually disabled people in Bengal showed Pthisis bulbi followed by microphthalmia to be the most common cause of blindness or partial sight.⁹

Data from blindness certificates should be used wisely as it is not representative of the whole population. Many people do not even apply for the blindness certification process which leads to bias, which is a global concern. In one cross-sectional survey of certification in the Moorfield Eye Hospital in UK, 51% of the patients identified as eligible for registration as disabled did not have a certificate.^{10,11}

Most people who came to the hospital for visual disability certification were of age less than 30 years (57.6%). Most people seeking visual disability certification in our institution do so for severe disability (75-100% category). However, significant number (42.21%) of persons had less than 40% visual handicap. This occurs in spite of Ministry of Health's notification that a person with less than 40% disability will not be eligible for benefits/concessions. Reason behind this being people's desperation to obtain visual handicap certificate in order to gain benefits from various government health schemes for visual handicap population. Therefore, it becomes our responsibility as physicians to ensure proper certification to such persons as well. One more challenge we have to face is the patients practising malingering in order to gain benefits from government schemes and jobs. In spite of such malingering practices being so common in a developing nation like ours having faith in our government and the healthcare system will take us a long way in providing the maximum benefit to the rightful recipient.

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