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Original Research Article

Prevalence of Blindness with Various Etiological Causes Based on Blindness Certificate Issued At District Hospital Kalaburgi, Karnataka

Dr. M. Radhika[1], Dr. M. Bindu Madhavi[2], Dr. Fathima Tahseen[3]
[1]Associate professor Dept. of Ophthalmology ESIC Medical College and Hospital Kalaburgi, Karnataka, India
[2*]Senior Resident Dept. of Ophthalmology ESIC Medical college and Hospital, Sanatnagar, Hyderabad, India
[3]Civil Assistant Surgeon, District Hospital Kalaburgi, Karnataka, India

***Corresponding author**
Dr. M. Radhika
Email: radhikam24@gmail.com

Abstract: Blindness is a major public health problem in developing countries. Yet, we lack contemporary data on the prevalence and the causes from which the priorities for its prevention, treatment and management can be identified. The aim is to identify the leading causes of visual disability among visually disabled individuals, certified in the Kalaburgi District Hospital in Karnataka, India. A prospective cross-sectional study was conducted on records of patients' visual handicap certificates for blindness issued from October 2014 to October 2015 were identified. These cases were selected on the basis of a simple random sampling method. Information was retrieved and analyzed. There will be a variation in the prevalence of leading causes for blindness and partial sight, from one geographical area to another. If the accurate cause is identified, the necessary preventive measures can be taken.
Keywords: Blindness, disability, public health problem

INTRODUCTION

One of the major public health problems in developing countries is blindness [1]. Ocular diseases may lead to partial or total blindness. Few ocular diseases may be treatable; others are not. Percentage of visual handicap is accorded as proposed by the Ministry of Social Justice and Empowerment [2].

Categories of Visual Disability (with correction)

Table-1: Categories of visual disability

Category	Better eye	Worse eye	% age Impairment
Category 0	6/9-6/18	6/24 to 6/36	20%
Category I	6/18-6/36	6/60 to Nil	40%
Category II	6/40-4/60 or field of vision 10° -20°	3/60 to Nil	75%
Category III	3/60 to 1/60 or field of vision 10°	F.C. at 1 ft. to Nil	100%
Category IV	F. C. at 1 ft. to Nil or field of vision 10°	F.C. at 1 ft. to Nil	100%

Note: F.C. means finger count

Process of certification- A disability certificate shall be issued by a Medical Board duly constituted by the Central/State Government having, at least three members, out of which at least one member shall be a specialist in ophthalmology. Prevention of visual impairment is an international priority, and its planning

requires contemporary data regarding its incidence and causes, based on which its priorities can be identified [3, 4]. This study analyzed various ocular diseases leading to permanent visual handicap, among visually disabled individuals certified in the Kalaburgi district hospital, Kalaburgi situated in Northern Karnataka, India. There were no studies on the causes of visual handicap and reasons for obtaining visual handicap certificates in this area. Data collected may be useful for the government of India to plan future strategies to prevent visual handicap and facilities for visual handicap in this area.

MATERIALS AND METHODS

Patients obtaining visual disability certificates during 1st October 2014 to 31st October 2015 were retrospectively analyzed. Two ophthalmologists from the hospital examined every case. Cause of blindness, percentage of visual disability, and purpose of visual disability certificate was noted. Routinely, the data related to the purpose of the visual handicap certification is mentioned in the blindness register of the hospital. A written consent and ethical committee clearance were obtained from all the individuals who were included in the study group. The percentage of disability was calculated, based on the guidelines for the evaluation of various disabilities and the procedure for certification [Table/Fig-1]. The variables of interest in our study were age, gender, percentage of disability and the causative factor of the disabled individual. The diagnosis was based on the medical history and the clinical examination and special investigations such as tonometry, fundus photography, ultrasound examination and automated perimetry were done as and when they were necessary.

RESULTS

One hundred and sixty nine individuals were included in this study. Out of this 169, male patients were 105 and female patients were 64. Majority of individuals were in the age group of 21-50 years. (Table-2)

Out of the 169 individuals included in the study 45.5% were 100% visually blind and only 17.1% were 40% visually blind. (Table-3)

Among the visually disabled individuals, congenital anomalies like micro cornea, micro ophthalmos, anophthalmos and coloboma of the eye accounted for (22.7%), pthisis bulbi(13.3%), refractive errors (19.85%), glaucoma (10.9%), retinitis pigmentosa (10.6%), corneal conditions like(corneal dystrophy, corneal degeneration, anterior staphyloma) (8.8%), optic atrophy (7.1%), albinism age related macular degeneration (ARMD) (5.14%)], glaucoma (4.04%), uveitis (1.10%) and diabetic retinopathy (1.10%) (Table-4).

Out of the 338 eyes of 169 individuals included in this study 171 eyes had preventable blindness and 167 eyes had non preventable blindness.(Fig-1)

Table 2: Age and sex distribution

Age (years)	Number of visually disabled
<20	48 (M- 30 F-18)
21-50	76 (M- 46 F- 30)
>50	45 (M-29 F- 16)

Table 3: Number of visually disabled in each category

Amount of visual disability	Number of visually disabled
40%	29(17.1%)
75%	63(37.2%)
100%	77(45.5%)

Table 4: Various causes of blindness

Causative factor	Visually disabled
Congenital anomalies	77(22.7%)
Pthisis bulbi	45(13.3%)
Refractive errors	39(11.5%)
Glaucoma	37(10.9%)
Retinitis pigmentosa	36(10.6%)
Cornea	30(8.8%)
Optic atrophy	24(7.1%)
Albinism	22(6.5%)
Uveitis and its complications	16(4.7%)
ARMD	5(1.4%)
Diabetic retinopathy	4(1.1%)
Others	3(0.8%)

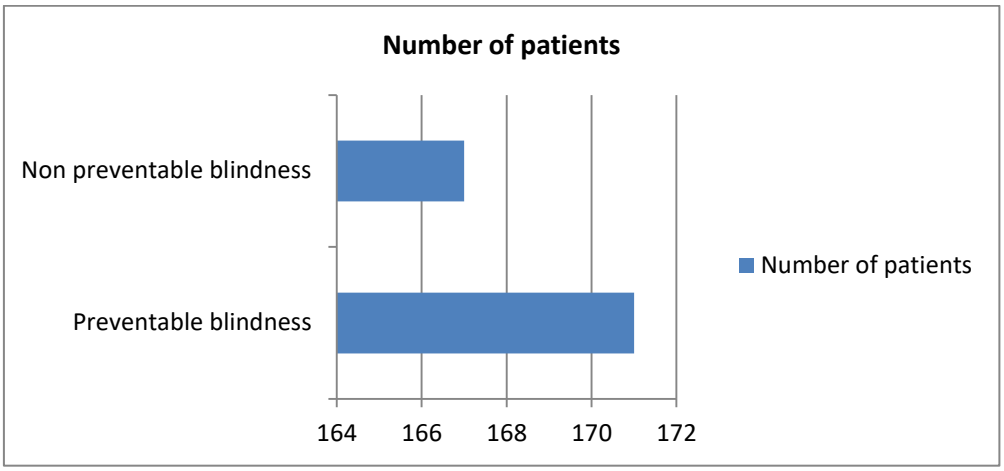

Fig 1: Preventable and non-preventable causes of blindness

DISCUSSION

Many surveys have been conducted since several years in India [5-7] and abroad [8, 9] regarding the prevalence of blindness in the community. These surveys have provided important information related to the causes of blindness and which have a great help for the health planners to put strategies to decrease the prevalence of blindness. Evidence-based information is important to plan for low vision care and rehabilitation services.

High prevalence of inherited diseases like retinitis pigmentosa (10.6%) and albunism (6.5%) causing blindness was noted in our study. Retinitis pigmentosa (RP) is the leading cause for obtaining visual handicap certificate. This could be related to the increased consanguinity and lack of genetic counseling in the area. A study done on RP patients in various states of India has shown an autosomal-recessive, predominant inheritance pattern, and more than 92% of cases in autosomal recessive category had positive history of consanguinity [10].

Preventable blindness like refractive errors (11.5%), corneal opacities (8.8%) and glaucoma (10.9%) constituted the major causes of blindness certificate issued in our study. Early diagnosis and management of these diseases can prevent blindness arising due to these conditions. Facilities for the diagnosis and management of these entities must be made available in the rural areas of the district. Out of all the preventable causes' most cost effective outcome can be expected in cases with blindness due to refractive errors. Early intervention and proper treatment can prevent the blindness in these conditions in almost 100% of cases. These include conducting regular school camps, creating awareness among parents and children regarding regular and proper usage of spectacles and yearly checkup with an ophthalmologist.

In our studies majority of corneal blindness cases were noted to be due to industrial accidents which can be prevented by imposing strict industrial safety rules for the employees. Glaucoma and diabetic retinopathy are gradually progressing diseases and the amount of illiteracy regarding the severity of blindness caused due to these conditions amongst the masses contribute to the delayed diagnosis of the conditions [11]. Setting specialty clinics and quick referrals of the suspected cases, where the facilities for the diagnosis and treatment are available, may prove useful to the patients staying in the remote areas. Periodic eye checkup camps in the remote areas will also serve the purpose but, setting of vision centers and screening by an ophthalmologist are more helpful. Gogtey *et al.;* stressed the importance of development of the vision centers in the rural area [12]. The strategies required for preventing blindness due to glaucoma and diabetic retinopathy should be initiated as early as possible so that their benefits start manifesting in near future. At par with the other studies conducted in India our study too showed hereditary ocular diseases or Congenital ocular anomalies as the leading cause for issuing blindness certificate (22.7%). Which included sclerocornea, anophthalmos, micro cornea, microphthalmos and colobomas as the main causes. Genetic disorders are frequently seen among causes of blindness in remote areas. The only possible way for prevention is genetic counseling and discouraging consanguineous marriage among the population.

In our study age-related macular degeneration (AMD) was seen in 5 eyes (1.4%). In India, prevalence of AMD ranges from 1.8%-4.7% indifferent epidemiological studies [13, 14]. Which when compared to the western population is very low which can be attributed to high life expectancy and more vigilant health checkups. However, it is likely to emerge as a major public health threat in the near future around the globe. Eye care policies should, therefore,

make provisions for this chronic age-related eye disease.

CONCLUSION

Our study results were almost in comparison with the various national studies expect for the low prevalence rate of diabetic retinopathy in our study. Depending on the prevalence rate of preventable and not preventable causes of blindness pertaining to a region, appropriate measures should be taken to prevent blindness in preventable and treatable cases as specified. India being developing country most cost effective outcome strategies should be given importance and early implementation of these should be the main priority for the health providers.

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