



Original Research Article

Visual handicap certificates: A tool to evaluate the causes for permanent visual impairment in Northern Maharashtra

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ABSTRACT

Aims: To analyse the causes of visual impairment amongst the patients coming for the visual handicap certificate and its application in eye health planning to prevent the blindness.

Methods and Materials: A retrospective data analysis of medical records of 553 people who had applied for the visual handicap certification. Examination was done by the ophthalmologists appointed for the handicap board. BCVA < 20/60 to 20/120 in better eye was included in visual impairment Cat I(40%) and BCVA 20/200 or less is blindness category II to IV(75% to 100%). Data was analysed using SSPE software and Chi square test for significance.

Results: The prevalence of male patients was significantly higher than that of females ($p < 0.05$), majority of them belonged to age group of 16 year to 45 years of age, 332 (60.03%) individuals had mild visual impairment (< 40%), in 59(10.66%) individuals moderate visual impairment (40%) was found; in 162(29.29%) individuals had severe visual impairment to blindness, over all phthisis ($p = 0.0001$) was the most common cause followed by corneal opacity ($p = 0.0249$) and Amblyopia ($p = 0.03$). Most of the causes are preventable and some of them are emerging as complications of cataract surgery, increased road traffic accidents and occupational hazards.

Conclusion: Visual handicap registers are useful for the rehabilitation of visually impaired individuals and to assess the pattern or causes of blindness in particular area. The most common etiological factors causing visual impairment in our study are preventable so we propose the empowerment of the school health system and general health delivery system, early detection of amblyogenic factors and its timely treatment, applying strict safety precautions to factory workers who are prone to ocular injuries and increased safety for road traffic in Northern part of Maharashtra.

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1. Introduction

Visual impairment is a major public health problem mainly in developing countries which limits social, economic, educational and vocational development of a person, the society ultimately the Nation. For the rehabilitation of visually impaired certain benefits were provided by the government. The Ministry of social justice and empowerment of Government of India given the guidelines for disability, the minimum degree of disability should be 40% for an individual to be eligible for any concessions or benefit,¹ for that they have to apply for the visual

handicap certification. In India registration of blind and visually impaired is voluntary so under registration is a major problem. Blindness registers are an important tool for public eye health programs and have been used as data sources for population based research, mostly in the developed world.² So the blindness registers will provide information regarding causes, distribution and its prevention apart from blindness. Prevention of blindness and visual impairment is an International priority and its planning requires contemporary data regarding incidence and causes based on which priorities can be identified. The 58th round data from the NSSO survey reveals that of all disabled individuals in India, 10.88% were blind and 4.39% were

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having low vision.³ Only few studies in India have analysed the applications of blindness certificates to know the causes of blindness and its application in planning eye health programme to reduce the blindness. No such study was conducted in our area Northern region of Maharashtra which contains a mixed population of Tribal, poor and lower economic strata. So our study is aimed to analyse the causes of blindness and visual impairment amongst individuals coming for visual handicap certification and its application in health planning to reduce the blindness.

2. Materials and Methods

The retrospective observational hospital based study of individuals attending out patient department of Government Medical College, Dhule, for visual handicap certification. Records of individuals coming for visual handicap certificate were obtained from July 2018 to July 2019 and all patients were included in the study. Total 553 people had applied for the visual handicap certification.

Examination was done by the ophthalmologists appointed for the handicap board. After a thorough examination of visual acuity, anterior segment and posterior segment along with required investigations like tonometry, perimetry, gonioscopy, funduscopy ect. patients were diagnosed and categorised according to the criteria for visual handicap. For purpose of certification, guidelines given by Government of India were followed which says that, disability should be assessed when the specialist is satisfied that further medical treatment/intervention is not likely to reduce the extent of impairment.⁴ Best corrected Visual acuity less than 20/60 to 20/120 in better eye was included in visual impairment which is Category I(40%), Visual acuity 20/200 or less is considered as blindness which is category II to IV (75% to 100%). Further visual impairment was divided according to the severity of impairment (Table 1). Mild visual impairment was included in category O and IV which is 20% and 30%. Moderate visual impairment category I (40%) and Sever visual impairment category II (75%) Blindness category III to IV (100%).

We analysed the causes of Visual impairment, blindness and its distribution amongst the given age group and according to category of Visual impairment. Treatable causes like Refractive errors without Amblyopia, recent Retinal detachment, Cataract were excluded and sent for the treatment of cause. Amongst causes, we could separate the causes like preventable or avoidable and non preventable. Some of the causes are upcoming due to the complications of cataract surgery like aphakia, bad pseudophakia, pseudophakic bullous keratopathy, after cataract, or corneal blindness due to increasing road traffic accidents, industrial work or farm work ect.

Data was entered in Excel sheet and analysed using SSPE software and Chi square test for significance.

3. Results

Total 553 no of patients were enrolled for the visual handicap certification during study period including 375 males and 178 female ration being 2.10:1 with statistical significant difference in sex of applicants ($p < 0.05$). Their age group was ranging from 4 years to 82 years and significant no of applicants belong to 16 years to 45 years age group i.e 266 no(48.10%) (Table 2). Distribution was done according to the categories of visual impairment, majority of applicants belonged to One eyed category (V) which is 270 (and then category IV (100% Blind) which is 110. Then Category O (20%) had 62, Category I had (40%)59, Category II had (75%)35, Category III had (100%) 17 applicants. The prevalence of blindness in our study is 22.96% and that of Mild visual impairment is 60.03% (Table 3).

221 (39.96%) Applicants diagnosed with Moderate to Sever Visual impairment and blindness (40% and above) and 332(60.03%) had Mild Visual Impairment. 48.82% of Applicants belonged to the One Eyed group.

Over all the most common cause of visual impairment is Phthisis ($p=0.0001$) and corneal opacity($p=0.0249$) followed by Amblyopia($p=0.03$). Amblyopia being the most common cause in age less than 45 years of age group and more than 45 years age group corneal opacity and phthisis are the common causes (Table 4). In our study above stated causes are prevalent and also the preventable in most of the cases. Now a day's the upcoming causes of visual impairment are complicated Pseudophakia (0.017), Ocular injuries in road traffic accidents and injuries in factory workers are increasing. We also found out the Category wise age distribution of visual impairment, the most common category in all ages is Category V which is the One Eyed category followed by category 0 then Category IV except in age group 46 years to 60 years (Table 5)

Most common cause of severe visual impairment to blindness is bilateral corneal opacity followed by congenital anomaly, Phthisis, Retinitis Pigmentosa and Pathological myopia. In 40% visual impairment category most common cause is Pathological myopia and that for less than 40% category is Amblyopia, Unilateral Phthisis and Unilateral corneal opacity.

4. Discussion

Handicap registration in India is optional and done at Institute level either the district hospital or the medical college in that area, so persons with any disability and seeking governmental benefits apply for the handicap registration. Visual impairment is an important public health issue mainly in developing countries as it impairs the quality of life, limits the career choices and job opportunities of those affected, thus constituting a socioeconomic burden on society.^{5,6} People with disability percentage of 40% and

Table 1: Categories of visual disability (classification currently in use)

Category	All with best corrected visual acuity		
	Better eye	Worse eye	Percentage impairment
0	6/9 to 6/18	6/24-6/36	20%
I	6/18-6/6	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 feet to No PL	100%
IV	FC 1 feet to No PL or Field of vision <10°	FC 1 feet to No PL or Field of vision <10°	100%
V (One eyed person)	6/6	FC 1feet to No PL	30%

PL-Perception of light

FC: Finger counting

Category I-IV Visually handicapped person

Table 2: Age distribution

Age group Years	No of applicants
0 – 15	65 (11.75%)
16 – 45	266 (48.10%)
46 – 60	131 (23.68%)
>60	91 (16.45%)

Table 3: Category wise distribution

S. No	Category	No of Applicants
1	O (20%)	62
2	I (40%)	59
3	II(75%)	35
4	III(100%)	17
5	IV (100%)	110
6	V (30%)	270
	Total	553

Table 4: Causes of visual Impairment and blindness according to the age group

	0-15 n=65	16-45 n=266	46-60 n=133	>60 n=91	Total	P-value
Pathological Myopia	07	32	16	02	57(10.30%)	0.0504
Amblyopia	12	39	9	0	60 (10.89%)	0.03
Corneal Opacity	05	35	29	18	87(15.73%)	0.0249
Phthisis	04	33	26	27	90(16.27%)	0.0001
Congenital Anomaly	12	22	06	03	43(7.77%)	0.0018
Glaucoma	01	06	04	07	18(3.25%)	0.066
Retinitis Pigmentosa	00	07	05	01	13(2.35%)	0.46
Retinal detachment & Retinopathies	01	08	03	03	15(2.71%)	0.884
Complicated Pseudophakia	03	09	07	11	30(5.42%)	0.017
Optic Atrophy	03	22	06	06	37(6.69%)	0.46
ARMED	00	01	00	04	05(0.90%)	0.004
Congenital Cataract	03	03	00	00	06(1.08%)	0.058
Empty Socket	04	16	12	04	36(6.50%)	0.536
Nystagmus	09	14	04	03	30(5.42%)	0.0008
Staphyloma	01	13	01	01	16(2.89%)	0.0594
Proptosis	00	04	02	01	07(1.26%)	0.94
Other Macular Pathology	00	02	01	00	03(0.52%)	0.979
Total	65(11.75%)	266(48.10%)	131(23.68%)	91(16.45%)	553	

Table 5:

Category	Age Group 0-15 years	Age Group 16-45 years	Age Group 46-60 years	Age Group >60 years
Category 0	13	34	14	01
Category I	11	26	08	14
Category II	11	11	07	06
Category III	01	07	06	03
Category IV	12	48	27	23
Category V	17	140	69	44
Total	65	266	131	91

more are considered as handicapped and entitled to lot of government benefits such as reservation in colleges and jobs, travel concession, Income tax benefits and various other disability benefits, hence there are many applicants for these certificates.^{4,7} We assessed the application of visual handicap certificates to find out the causes and its distribution in our area. This is one of its kind to be performed in our area, so we can find out some suggestions to reduce the visual handicap and improve eye health delivery system and also we compared the results of our study with similar other studies and analysed the results.

According to the observations of our study, number of male applicants was higher than that of female applicants; it was statistically significant and comparable with other similar studies like Sambuddha Ghosh et al in West Bengal⁸ and Ambastha A et al⁹ in Bihar in India but a study performed by Michal S. Nowak and Janusz Smigielski¹⁰ in Poland females were more than the males that might be because it is a developed country, everyone has good accessibility to health services and also there is difference in age group of the study population. In India males are the money earners in most of the families and traditionally they have more mobility and accessibility to health services as compared to females due to social and economic restrains. Also the registration for visual impairment and blindness is institute based and optional, so those who seek benefits from certificates apply the most. Age of applicants was 5 years to 78 years, most of the applicants belong to the age group of 16 years to 45 years and are in line with the similar studies. The prevalent category was with mild visual impairment (60.03%); with common diagnosis of one eyed with phthisis, empty socket or total corneal scarring or mild Amblyopia in age group of 16 years to 45 years and they apply most to get various benefits of handicap certificates. In a study performed by Sambuddha Ghosh et al in West Bengal⁸ found that the 84.5% of applicants belonged to the Blindness (100%) category but the population they included wa the beneficiaries of the handicap certificates that is above 40% category and in a study by Ambastha A et al⁹ in Bihar results are comparable with our study and study population was also in line. In our study we assessed the causes along with its distribution in age groups and category. Most common etiological factor of visual impairment in

all groups is Phthisis followed by corneal opacity and Amblyopia. The common causes of visual impairment among the applicants of less than 15 years of age are congenital anomaly followed by Amblyopia; similar results were found in congenital anomaly can be reduced with prenatal counselling, genetic counselling and awareness regarding consanguineous marriages. Amblyopia, unilateral phthisis and corneal opacity are the common causes of mild visual impairment which can be prevented by empowering the school health programs, early detection of amblyogenic factors and its timely treatment, applying strict safety precautions to factory workers who are prone to ocular injuries. Results are comparable with that of study conducted by Sambuddha Ghosh et al in West Bengal.⁸ They observed the most common cause being the phthisis (17.74%) but the incidence of corneal opacity was lesser as compared to our study this could be because of the difference in age group along with differences in occupational patterns. In current study we found these are also comparable with the above said article of Ambastha A et al.,⁹ according to a study in South Africa¹¹ most prevalent etiological factors are uncorrected refractive errors, cataract and glaucoma but this is not in correspondence with handicap certificates and also the difference in health delivery system like poor cataract surgical rate might be the cause. Population based study in Hariyana¹² by Malhotra S et al. suggest the common cause of visual impairment was uncorrected refractive errors followed by other causes and cataract, but they have different set of population for study and again not in correspondence with handicap certificates. This might be limitation of our study as we have taken hospital based study population and in correspondence with handicap certificates. Findings another significant observation in our study was, majority of applicants belonged to One Eyed group seeking benefits for losing One eye but they don't come under beneficial category which is 40% and more, some of the visually impaired applicants don't fit in the categories provided by the government so in our study we found out that there is need to revise the categories for visual impairment.

Observations of our studies are, the Blindness register is a good tool to evaluate the etiological factors and

pattern of visual impairment in given area and it can be used to improve eye health services like increasing outreach diagnostic camps, screening of population for specific factors according to the age group, empowering school health programmes with routinely eye check ups for children's, timely education of the factory and other workers who are prone to ocular injuries, strengthening of the cataract surgery camp and related services.

5. Conclusion

Visual handicap registers are useful for the rehabilitation of visually impaired individuals and to assess the pattern or causes of blindness in particular area. The most common etiological factors causing visual impairment in our study are preventable so we propose the empowerment of the school health system and general health delivery system, early detection of amblyogenic factors and its timely treatment, applying strict safety precautions to factory workers who are prone to ocular injuries and increased safety for road traffic in Northern part of Maharashtra. Patients with One Eyed category was the most common applicants seeking benefits for losing one eye and some of the visually impaired applicants don't fit in the categories provided by the government so our study found out that there is need to revise the categories for visual impairment.

6. Source of Funding

None.

7. Conflict of Interest

None.

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