



ORIGINAL RESEARCH PAPER

Ophthalmology.

CAUSES OF VISUAL DISABILITY IN PATIENTS SEEKING VISUAL DISABILITY CERTIFICATES ATTENDING TERTIARY CARE CENTRE- A DESCRIPTIVE STUDY.

KEY WORDS: Visual Impairment, blindness, Cataract, Trachoma, Onchocerciasis, Refractive errors

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ABSTRACT

Introduction: According to the World Health Organizations (WHO) estimation there are approximately 253 million visually impaired people all over the world, among whom 36 million are blind and 217 million have moderate to severe vision impairment. Obtaining a visual disability certificate is a part of rehabilitation of a blind person that grants indirect benefits related to travelling, service, educational and economic purpose.

Aim: To study and analyze various causes and certain preventable causes of visual disability which lead to visual disability in patients seeking visual disability certificates.

Design: Cross-sectional Descriptive study

Place and duration of study: The study was conducted on patients attending ophthalmology out-patient department (OPD) at a tertiary care hospital during January 2019 to June 2020.

Methodology: Total of 316 patients were included in this cross-sectional study. All the patients underwent through history taking regarding the symptoms and duration of their disability, complete ophthalmic examination, visual acuity testing and refraction, anterior and posterior segment evaluation followed by careful and detailed examination of the eye. The means and standard deviations (SD) were calculated as continuous variables, while ratios and proportions were calculated as categorical variables.

Results: Travelling was one of the major reasons behind obtaining disability certificate. Congenital malformation was most common anterior segment pathology observed and optic atrophy was most common posterior segment pathology observed in the study. The most common etiological factors causing visual disability were found to be preventable.

Conclusion: Proposed empowerment of general health delivery system, early detection and treatment of ocular infections or ocular diseases were the suggested solutions for causes that were preventable. Prenatal counselling, genetic counselling and awareness regarding consanguineous marriage were the proposed solutions recommended that to reduce the congenital causes. Certain applicants seeking government benefits or visually impaired didn't fit in categories provided by government and hence need to revise categories for visual disability was recommended.

INTRODUCTION:

According to the World Health Organizations (WHO) estimation there are approximately 253 million visually impaired (Thulasiraj et al., 2003) people all over the world, among whom 36 million are blind and 217 million have moderate to severe vision impairment.

Blindness has always been one of the important public health problem in India, (L. Dandona, Dandona, & John, 2001; L. Dandona et al., 1998; Limburg, Vaidyanathan, & Pampattiwar, 1996; Murthy, Gupta, Bachani, Jose, & John, 2005; Nirmalan et al., n.d.; Thulasiraj et al., 2003; Thylefors, Négrel, Pararajasegaram, & Dadzie, 1995) a country that is land of a billion inhabitants. Visual system damage and functional loss can be caused by various ocular diseases and can lead to blindness and low vision. While some of them are treatable others are not treatable. Non-treatable diseases lead to visual disability, which ultimately not only affects patient's daily life and working abilities but also has an adverse consequence on the society and the economic development of the country. In the ICD-9 of WHO (International Statistical Classification of Diseases, Injuries and Causes of Death); a 'low vision' (category 1 and 2) is defined as visual acuity of less than 6/18 but equal to or better than 3/60, or a corresponding visual field loss to less than 20°, in the better eye with the best possible correction. 'Blindness' (category 3) can be defined as visual acuity of less than 3/60, or a corresponding visual field loss to less than 10°, in the better eye with the best possible correction. 'Visual impairment' suggests both low vision and blindness. ("Census of India : Provisional Population Totals India : Paper 1 : Census 2011,")

Approximately among 253 million visually impaired people all over the world, 36 million are blind and 217 million have moderate to severe vision impairment according to the World Health Organizations (WHO). ("Fact sheets,") The guidelines

by the ministry of social justice and empowerment, Government of India exhibits that the minimum degree of disability of 40% for an individual makes him/her eligible for any concession or benefit. ("Fact sheets,")

Social services for the visually disabled are coordinated on the basis of certification for blindness or visual disability. The registration as blind or visually disabled in India is purely voluntary. Based on the severity, a constituted board including an ophthalmologist, a physician and the chairman of the Medical Board categorizes and certifies visually disabled persons in India. After vigorous clinical examination and verification of the domicile of the applicant, certification is issued. The 58th round data from the National Sample Survey Organization (NSSO) revealed that, of all the disabled individuals in India, 10.88% were blind and that 4.39% had low vision (*National Sample Survey Organisation Ministry of Statistics and Programme Implementation Government of India, 2003*)

As per the Census of India, 2001, depicts low vision prevalence of 61 per lakh population and prevalence of the totally blind persons was found to be 156 per lakh population. The prevention of visual disability is an international priority, and its planning requires data regarding its incidence and causes, based on which its priorities can be identified. Obtaining a visual disability certificate is a part of rehabilitation of a blind person. It helps the blind person to obtain various benefits related to travelling, service, educational and economic purpose.

However, under-registration of the blind is a global problem. (Barry, 2005; C. Bunce & Wormald, 2008) There have been many surveys in abroad (Catey Bunce, 1998) (Muñoz, 2002) and India (R. Dandona et al., 2002) (Murthy et al., 2005) regarding the prevalence of blindness in the community.

These studies might prove as vital information related to the causes of blindness and help the health planners to help establish strategies to decrease the prevalence of blindness.

MATERIALS AND METHODS:

The present study was conducted on patients attending ophthalmology out-patient department (OPD) at a tertiary care hospital during the study period. Patients fulfilling inclusion criteria and all visually disabled patients seeking visual disability certificate attending ophthalmology OPD at tertiary care hospital were included.

INCLUSION CRITERIA:

All visually disabled patients seeking visual disability certificate attending ophthalmology OPD at tertiary care hospital during the study period were included in the study, after taking informed verbal consent of the patients (or guardians in case of minors).

EXCLUSION CRITERIA:

Patients who did not give consent for being included in the study.

All visually disabled patients seeking visual disability certificate attending the outpatient department (OPD) of ophthalmology at tertiary care hospital during the study period (January 2019 to June 2020) were selected for the study. Total 316 patients attended outpatient department of ophthalmology at tertiary care hospital during study period.

After approval from the Ethics Committee and with written informed consent, this cross-sectional study was finalized on the visually disabled patients seeking visual disability certificate attending the Ophthalmic OPD at tertiary care hospital during the study period. All the patients underwent through a complete ophthalmic examination, which included visual acuity testing and refraction, both anterior and posterior segment evaluation.

Each patient was subjected to detailed history taking regarding the symptoms and duration of their disability. A careful and detailed examination of the eye was undertaken including: visual acuity measurement with the help of; a. Snellen's Chart or Landolt's broken Rings or " C " chart for distant vision and Cardiff cards in children, b. Refraction with the help of Autorefractometer, c. Refraction with retinoscopy and cycloplegic refraction whenever needed, d. Gross examination of eyelids and adnexa, conjunctiva, cornea, anterior chamber, iris, pupil and lens with torch light; Extraocular movements, f. Cover – uncover test for detection of squint if any, g. Intraocular pressure with Schiotz tonometer and applanation tonotometer, h. Examination of anterior segment of eye with a slit lamp, i. Examination of fundus with direct ophthalmoscope, indirect ophthalmoscope with 20D and slit lamp microscopy with 90D after dilating pupil with 1% tropicamide- phenylephrine eye drop, j. Colour vision assessment using Ishihara Chart and Perimetry and OCT when needed.

Visually disabled patient were subjected to clinical evaluation i.e; routine anterior segment eye examination by the ophthalmologist using flash light examination (LED torch light) and the slit lamp. Following this, each patient's pupil was dilated using Tropicamide (1%) dilating drops and then patient was made to wait for half an hour for the medication to take action. Once pupil was dilated, posterior segment was examined using direct ophthalmoscope and findings were confirmed with indirect ophthalmoscopy with 20D lens.

RESULTS:

Mean and standard deviation (SD) were calculated for the continuous variables, while ratios and proportions were calculated for the categorical variables. A brief interpretation was included in the results below every table and

summarized at the end. Subjects were distributed and summarized on socio- demographic factors like; age, gender, education and occupation. Subjects were summarized focusing on reasons for obtaining certificate. Majority of the subjects belonged to the age group 21 to 40 yrs. i.e. 134 out of 316 (42.40%), followed by 83 in frequency in the age group of 61 to 80 yrs (26.26%), 82 (25.94%) in the age group of 41 to 60 yrs. There were only 16 (05.06%) and 01 (0.33%) from age group between 1 to 20 years and 81 to 100 years respectively. The study involved male patients 205 (64.87%) were more than female patients 111(35.13%), male to female ratio was 1.87. Out of 316 patients maximum number of patients were illiterate 104 (32.92%) followed by 60 graduates (18.98%), 49 having education of higher secondary (15.50%) and 44 Secondary (13.92%) in decreasing order. Thirty-three (10.45%) had mid school education and 26 (8.23%) were having primary education. Distribution of patients based on the occupation reflected that 83 (26.26%) patients were students 71 (22.47%) were unemployed, 68 (21.52%) were semiskilled, 46 (14.56%) were homemakers, 31 (9.82%) were skilled and remaining 17 (5.37%) were unskilled workers.

One of the important objectives of the study was to find out the reasons for obtaining disability certificates by the subjects. As shown in **Table no. 1** below, travelling was the major reason, followed by educational, financial aid, service applications and income tax purposes.

Table No. 1: Distribution of patients according to Reason for Obtaining Certificate.

Reason for Obtaining Certificate	Frequency	Percentage (%)
Educational	63	19.96
Travel	155	49.04
Financial	52	16.45
Income Tax	12	03.79
Service	34	10.75
Total	316	100.00

Discussing about the distribution of patients according to BCVA of both eyes in results showed that poor visual acuity and highest percentage of disability was seen. Fair and good visual acuity was observed in one eyed and patients having low percentage of disability. Subjects were also summarized on the basis of intra-ocular pressure (IOP) and results showed that maximum number of subjects had normal intraocular pressure in one or both eye followed by low IOP and high IOP. Frequency percentages of the subjects were distributed according to the diagnosis, as depicted in **figure no. 1**; phtthisis bulbi was most common causes, corneal pathology, amblyopia, congenital malformation, cataract, refractive error, optic atrophy respectively. Other causes include hereditary diseases, eviscerated eye, trauma, nystagmus, ocular tumours etc.

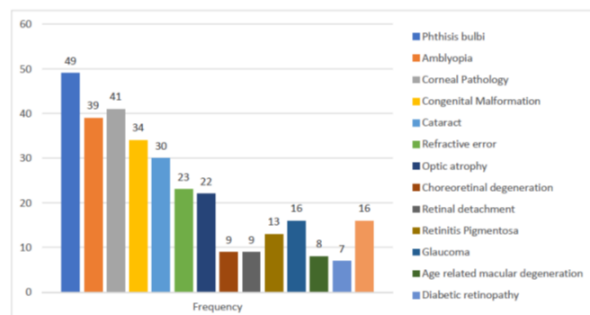


Figure No. 2: Distribution of patients according to Diagnosis.

Percentage of disability was understood to be one of the important aspects while issuing the visual disability certificate. **Table no. 2** shows the frequency and percentages for the same. The table shows that percentage of disability in patients seeking visual disability certificate in

those having 40% disability were maximum i.e; 105 (33.22%) followed by 30% disability 79 (25%) and 100% disability 70 (22.15%).

Table No.2- Distribution of patients according to Percentage of Disability.

Percentage of Disability (%)	Frequency	Percentage (%)
Ten percent	08	02.53
Twenty percent	02	0.63
Thirty percent	79	25.00
Forty percent	105	33.22
Fifty percent	06	01.89
Sixty percent	20	06.32
Seventy percent	08	02.53
Eighty percent	08	02.52
Ninety percent	10	03.16
Hundred percent	70	22.15
Total	316	100.0

Different types of certificates like, **temporary for 1 year, temporary for 4 years, permanent non- progressive and permanent progressive.** The percentages are shown in the figure no.2 below.

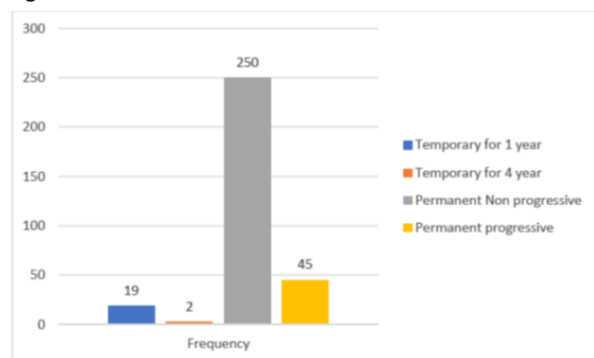


Figure no. 2: Distribution of patients according to Type of Certificate

DISCUSSION:

Visual Disability registration in India is optional and done at Institute level either at district hospital or at medical college in that area, so persons with any disability and seeking governmental benefits applies to 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. People with disability percentage of 40% more are considered as visually disabled or 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 were many applicants for these certificates. Subjects were examined for visiting tertiary care centre seeking visual disability certificates to find out the causes and its distribution in the area. This is one of its kinds to be performed in this region and this type of study has never been conducted. Certain recommendations to reduce the number of visually disabled persons and improve eye health delivery system are mentioned.

The results were compared and analyzed the results with similar other studies. The present study was carried out in department of Ophthalmology at tertiary care hospital. The study design was descriptive study. As mentioned in the results section above; the results were consistent with the studies conducted by (S.K. Nainiwal, 2016), (Patil, Pujar, C. N., & Salagar, 2015), (Ambastha, Kusumesh, Sinha, Sinha, & Bhasker, 2019b) (Joshi, 2013), (S Gawai, G G Khan, G Choudhary, & S Khannar, 2020) and (Kamat & Shinde,

2016) however, studies conducted by (Kareemsab, Rachaiah, & Balasubramanya, 2011), (R. Dandona et al., 2002) and (Venkata Murthy, Gupta, Bachani, Jose, & John, 2005) where majority, 107 (38.60% individuals were in the age group of 40 to 65 years and 27 (9.92%) were above 65 years of age. The study showed male predominance with male to female ratio 1.87 attending the tertiary OPD for disability certificate was more than females. These results are consistent with the studies conducted by (P. S. K. Nainiwal et al., 2016)(Patil et al., 2015)(Ambastha, Kusumesh, Sinha, Sinha, & Bhasker, 2019a), (Joshi, 2013), (S Gawai et al., 2020) (Kamat & Shinde, 2016) (Kareemsab et al., 2011) and in contrast with the studies conducted by (R. Dandona et al., 2002) and (Venkata Murthy et al., 2005). Out of 316 patients, majority of the patients were illiterate 104 (32.92%) followed by graduates 60 (18.98%), higher secondary education in 49 (15.50%) and secondary 44 (13.92%) in decreasing order. Similar results were observed in study by (Murthy et al., 2005; P. S. K. Nainiwal et al., 2016) were comparable with maximum illiterate applicants. However results observed by (Joshi, 2013) were in contrast where illiterate were 41.22%. Eighty-three (26.26%) were students followed by unemployed 71 (22.47%), semiskilled occupation 68 (21.52%) as most of the applicants belonged to the age group 21-40. No other study categorized patients under such variables. However study by (P. S. K. Nainiwal et al., 2016), (Kareemsab et al., 2011) and (Joshi, 2013) observed that majority patients were unemployed. Discussing about the reasons for obtaining disability certificate, travelling was the most commonly observed reason i.e; 155 (49.05%) followed by education 63 (19.96%), financial 52 (16.45%), for service 34 (10.75%) and 12 (3.79%) for income tax purpose. These results are consistent with the studies conducted by (P. S. K. Nainiwal et al., 2016), (Joshi, 2013) and (Kamat & Shinde, 2016) where travelling was main reason for obtaining disability certificate. In current study, subjects were analysed based on BCVA of both eyes where maximum number of patients were having poor visual acuity (<6/60) followed by fair (6/18) and good (>6/18) visual acuity. Similar results observed in majority of previous studies as patients included in their studies were visually disabled. In this study maximum subjects had normal intra-ocular pressure (10-21mmHg) in one or both eye followed by low IOP (10mmHg) and high IOP (21 mmHg). This variable was studied and borderline or raised IOP was missed in many patients, which may have lead to irreversible optic nerve damage and permanent vision loss and to diagnose glaucoma patients. In this study Table no 2 showed phthisis bulbi was most common cause observed in 49 (15.5%) patients followed by corneal pathology. These results are consistent with the study conducted by (S Gawai et al., 2020) where phthisis bulbi was most commonly observed in 90 (16.27%) patients followed by corneal pathology 87 (15.73%), amblyopia 60 (10.89%) in decreasing order and by (S. K. Nainiwal, 2016) in which Phthisis Bulbi was most common cause 95 (23.60%) but incidence of corneal pathology was much lesser as compared to this study and could be because of difference in occupational pattern and literacy. Other studies conducted by (Murthy et al., 2005) and (R. Dandona et al., 2002) observed cataract was most common cause contributing 72.76% and 45.8% respectively. This could be because of difference in age group which was above 50 years of age and improved quality and surgical rate over time. Distribution of patients according to percentage of disability was studied and it was observed that, 105 (33.22%) of the total cases had 40% disability followed by 30% disability in 79 (25%) and 100% disability in 70 (22.15%). These results are consistent with the studies conducted by (Patil et al., 2015) and (Kamat & Shinde, 2016). These results, however, did not correlate with the studies conducted by (Kareemsab et al., 2011), (P. S. K. Nainiwal et al., 2016), (S Gawai et al., 2020) where patients with 100% disability formed a majority group as compared to the patients with a disability of the lower grades. Majority of the subjects got permanent non-progressive (79.11%) type of certificate followed by permanent progressive (14.24%), temporary for

1 year (06.02%) and temporary for 4 years (00.63%). Those who got temporary certificates were re-examined after specified duration. This has never been done in any of the previous studies. Thus the observations made from these studies would help in evaluating the etiological factors and pattern of visual disability in patients visiting ophthalmology department at tertiary care centre. This will be useful to improve eye health services like increasing outreach diagnostic camps, screening of population for specific disease, empowering school health programs with routinely eye checkups for children, timely education of the factory and other workers who are prone to ocular injuries, strengthening of the cataract surgery camp and related services.

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