

A Prospective Observational Assessment of the Clinico-Etiologic Profile of Visual Impairment

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Abstract

Aim: The aim of study was to assess the clinical profile of causes of visual impairment in Bihar Region.

Methods: A study was conducted in Department of ophthalmology Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India for 1 year. The study participants included 100 patients irrespective of their age group, coming in the OPD of the Ophthalmology. Informed consent was obtained and patients were interviewed by the investigators and information was entered, based on a pre-tested pre-designed proforma.

Results: The majority of the participants (36%) were middle-aged belonging to the age group of 41-60 years; while the least (3%) were those aged more than 80 years. The participants studied were grouped into; no visual impairment i.e. 70 (70%), visual impairment Grade 1 i.e. 20 (20%), Grade 2 i.e. 5 (5%) or blindness Grade 3 i.e. 3 (3%), Grade 4 i.e. 2 (2%) based on WHO classification of low vision¹. In our study, 61% of the study participants i.e. 61 were found to have refractive errors. 6 participants (6%) presented with retinopathy due to diabetes or hypertension. 2 patients i.e. 2% had macular diseases such as age related or hereditary macular degeneration.

Conclusion: A high prevalence of refractive errors and cataract was noted, which are both causes of preventable blindness and can only be prevented by creating awareness by means of health education.

Keywords: Ocular morbidities, visual impairment, clinical profile, Bihar.

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Introduction

Visual deficits due to any cause can hamper social, psychological and emotional wellbeing of an individual. [1] Visual morbidity has tremendous consequences on the individual and the society in general, especially in a developing economy like ours. [2] With an estimated prevalence of blindness of

0.45%, India is home to third of world's blind population (12million/35million). [3] This act also defines visual benchmark disability as having at least 40% disability due to any cause or illness. Blindness registers have been playing a vital role in assessing incidence and prevalence of visual disability. This is significant in

terms of total number of disability-adjusted life years lost, social and functional challenges, and lifelong burden on the child and caregivers. [4] Many causes of severe visual impairment and blindness (SVI/BL) in children are avoidable, either preventable or treatable. There are geographical variations in the major causes of childhood blindness. [5] The registration of blindness and low vision in India is voluntary and has to be certified by an ophthalmologist. [6] The rights of persons with disability act 2016 fixes the roles and responsibility of safeguarding the rights of people with disabilities in the state. In India, identification of the causes of visual morbidity is of paramount importance to assist in planning of national and social blindness prevention schemes. Low vision aids and rehabilitation therapy considered the primary methods of intervention in visually impaired patients. The aim of low vision aids is to improve patient's performance in certain tasks through efficient use of residual vision through prescribing optical and nonoptical electronic devices. [7] These optical devices aim to improve visual functions by enhancing perceived retinal images through magnification, image displacement, light filtering, or light condensation. [8] The non-optical electronic devices generally include a number of adaptations in perceived image such as contrast, spatial frequency, and brightness range or edge boldness. [9,10]

Thus, the aim of study was to assess the clinical profile of causes of visual impairment in Bihar Region.

Materials and Methods

A study was conducted in Department of ophthalmology, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India for 1 year. The study participants included 100 patients irrespective of their age group, coming in the OPD of the Ophthalmology. Informed consent was obtained and patients were

interviewed by the investigators and information was entered, based on a pre-tested pre-designed proforma.

All adults/subjects aged above 18 years, having permanent visual impairment, visiting the OPD of our institute for the purpose of disability certification were included in the study. However, those with avoidable/treatable causes of decreased vision at presentation such as cataract, correctable refractive errors and records with incomplete data were excluded from the study.

A complete history, demographic data, educational status, residence and cause for visual impairment was noted. Patients distant visual acuity after best possible correction in eye/eyes recorded. Complete ocular examination by slit lamp biomicroscopy, fundus examination by +90D and indirect ophthalmoscopy was done if required and observations noted. Findings of special investigations like B scan, Visual Evoked Potential, Optical Coherence Tomography, Visual fields if needed were also noted. Definitions of Visual impairment, Low vision and Blindness were set according to set criteria of Gazette of India as described below.^{4,7}

Visual impairment was defined according to the criteria set by the Gazette of India, as distance visual acuity less than 6/18 or visual field loss by predefined standardized conservative criteria in the better eye. "Low-vision" defined as visual acuity not exceeding 6/18 or upto 3/60 or in the better eye with best possible corrections or limitation of the field of vision subtending an angle of less than 40 degree up to 10 degree. "Blindness" means a condition where a person has visual acuity less than 3/60 in the better eye with best possible correction or limitation of the field of vision subtending an angle of less than 10 degree. [4,7]

Statistical Analysis

Data entry was done using Microsoft Excel 2010 version and statistical analysis

included percentages and proportions. All the recorded data were statistically analysed by IBM SPSS

Statistics version 21 (IBM Corp., Armonk, N.Y., USA). For statistical significance, p value <0.05 was considered.

Results

Table 1: Age distribution of study participants

Age group (years)	No. of patients	%
1-20	12	12
21-40	24	24
41-60	36	36
61-80	25	25
>80	3	3
Total	100	100

The majority of the participants (36%) were middle-aged belonging to the age group of 41-60 years; while the least (3%) were those aged more than 80 years.

Table 2: Visual impairment among study participants

Categories of visual impairment	Vision	Number of patients	%
No visual impairment	>6/18	70	70
Visual impairment			
Category 1	6/18-6/60	20	20
Category 2	6/60-3/60	5	5
Blindness			
Category 3	3/60-1/60	3	3
Category 4	1/60-PL	2	2
Total		100	100

The participants studied were grouped into; no visual impairment i.e. 70 (70%), visual impairment Grade 1 i.e. 20 (20%), Grade 2 i.e. 5 (5%) or blindness Grade 3 i.e. 3 (3%), Grade 4 i.e. 2 (2%) based on WHO classification of low vision¹.

Table 3: Distribution of ocular morbidities among the study participants

Ocular Morbidities	Number of patients	%
Corneal opacities	1	1
Cataract	20	20
Apakhia	1	1
Refractive errors	61	61
Glaucoma	5	5
Optic atrophy	4	4
Retinopathies	6	6
Macular diseases	2	2
Total	100	100

In our study, 61% of the study participants i.e. 61 were found to have refractive errors. 6 participants (6%) presented with retinopathy due to diabetes or hypertension. 2 patients i.e. 2% had macular diseases such as age related or hereditary macular degeneration.

Discussion

Prevention of childhood blindness is a priority of the World Health Organization's Vision 2020: The Right to Sight. [11] In India, the prevalence of blindness in children under 16 years of age

is estimated to be approximately 0.8/1,000. [12] It is estimated that at least 200,000 to 300,000 children in India have severe visual impairment or blindness and approximately 15,000 are in schools for the blind. [12,13] In India, identification of the causes of visual morbidity is of paramount importance to assist in planning of national and social blindness prevention schemes, however most of the data accrued is from the voluntary registration of the blind and blindness registers of various institutes which issue blindness disability certificates for the purposes of employment, education and economic support. [15] Due to the voluntary registration process of the blind, there is under-reporting especially in rural parts of India leading to missed cases and also data regarding the cause of visual impairment in patients with less than 40% visual handicap is missed out from our blindness registers which impacts the planning and prevention of blindness activities in the state and the country. [14,15]

In our study, 61% of the study participants i.e. 61 were found to have refractive errors. Our study findings are similar to the findings of a study by Agrawal et al conducted in urban Meerut where 86.4% participants had refractive errors. [16] The high prevalence of hypermetropia in our study compared to that found by similar such studies by Haq et al [17] could be due to a higher prevalence of cataract found in our study.

Studies conducted in Allahabad and Uttar Pradesh had a similar gender ratio like ours. [17,18] Although it is rare, childhood cataract is one of the most important causes of blindness and severe visual impairment in children and is responsible for 5–20% of pediatric blindness worldwide. [19]

Untreated cataract continues to be the most common cause of blindness and VI in adults aged 50 years or more despite nearly 6.5 million cataract surgeries conducted in India with an average

cataract surgical rate of nearly 5000 per million population per year. [20] Socioeconomic development and better health care provisions in the recent years has increased the life expectancy and hence the proportion of ageing population in the country. Irrespective of socio-economic status, the non-communicable diseases (NCDs), including blindness, requiring large quantum of health and social care are extremely common in old age. [21] Corneal opacity emerged as the second most common cause of blindness in this survey. Majority of the avoidable blindness burden due to CO was attributed to non-trachomatous causes and this emphasises the need of strengthening preventive strategies and eye banking services in the country. Proportion of visual impairment due to uncorrected refractive error has reduced considerably compared to previous studies. [22] Adoption of intraocular lens implantation as a routine practice following cataract surgery has decreased visual impairment due to uncorrected aphakia but at the same time an increase in visual impairment due to cataract surgical complications was observed. Effective surgical techniques and a skilled cataract surgeon are essential for successful outcome following cataract surgery. [23,24]

Conclusion

A high prevalence of refractive errors and cataract was noted, which are both causes of preventable blindness and can only be prevented by creating awareness by means of health education.

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