

Original research article

The Clinic-Demographic Profile and Various Aetiologies of Visual Impairment: A Prospective Observational Study

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Abstract

Aim: To determine the clinical and demographic profile and various aetiologies of visual impairment.

Methods: A prospective observational study was conducted in the Department of Ophthalmology, Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India, for 1 year. 200 patients were included in this study. History was obtained regarding any ocular complaints, and a detailed ophthalmic examination was done which included a detailed torch light examination, assessment of visual acuity using Snellen's distance vision chart and Times New Roman near vision chart, tonometry using Schiotz tonometer, and fundus examination using direct ophthalmoscope.

Results: 120 (60%) out of 200 participants were females, while 80 (40%) were males, i.e. they were almost equally distributed. The majority i.e. 140 (70%) participants used L.P.G as fuel at home; while coal, wood or cow dung was used by 46 (23%) and 14 (7%) used both. The participants studied were grouped into; no visual impairment i.e. 148(74%), visual impairment Grade 1 i.e. 31 (15.5%), Grade 2 i.e. 10 (5.5%) or blindness Grade 3 i.e.7 (3.5%), Grade 4 i.e. 3 (1.5%) based on WHO classification of low vision. Out of the 200 patients that were studied, majority i.e. 168 patients (84%) had refractive errors. In some cases, more than one type of refractive error was noted. 4 patients (2%) had a nebular corneal opacity, which had developed following trauma with an iron nail.

Conclusion: Only through health education and increased public visibility can they be found and addressed as soon as possible. This will lessen the stigma of vision deficiency and blindness, which will reduce our society's economic burden.

Keywords: blindness, refractive errors, economic burden

Introduction

Blindness is a life-changing physical disorder with profound mental consequences. There are many individuals with poor vision and blindness all over the world, and there is a lot of research on the incidence of low vision and blindness in different regions of the world. The data, on the other hand, varies dramatically from one area to the next. The World Health Organisation (WHO) Task Force on Statistics on Blindness estimated 37.1 million blind people globally in 1995, meaning a global prevalence of 0.7 percent.¹ The incidence of blindness in children under the age of 16 is reported to be about 0.8 per 1,000 in India. ² At least 200,000 to 300,000 children in India are believed to have serious vision disability or blindness, with 15,000 attending blind schools.^{2,3} This is important in terms of the overall amount of disability-adjusted life years missed, social and physical difficulties, and the child's and caregivers' long-term responsibility.⁴ Many causes of extreme vision deficiency and blindness (SVI/BL) in

children can be avoided, treated, or removed. The main causes of childhood blindness differ depending on where you live. 5

Blindness is characterised as a visual acuity of less than 3/60 with best correction in the better eye, according to the World Health Organisation.⁶ Childhood blindness is a physically debilitating disease that often has a significant mental and financial effect. It is a big cause of blindness all over the world.⁷ It applies to disorders and illnesses that arise in children under the age of 16 and, if left unchecked, result in significant vision disability that is unlikely to be treated later in life.⁸ In 1999, the World Health Organization (WHO) released "Vision 2020: the Right to See." Its key goal is to reduce preventable blindness globally by 2020.⁹ Blindness affects about 1.4 million children worldwide. Seventy-five percent of the world lives in Africa and Asia. Children's blindness does not seem to be regionally consistent. Any of the main determinants of this problem are social growth, provision of eye care facilities, and primary health care. Optic nerve and higher vision pathway lesions are common causes of blindness in high-income countries.¹⁰ In low-income nations, uncorrected refractive error, keratomalacia due to malnutrition and insufficient immunisation, congenital cataract and glaucoma, ophthalmia neonatorum and other ocular diseases, trauma, and consanguineous marriage, which contributes to a rise in congenital anomalies, are the leading triggers. Retinopathy of prematurity is becoming more prevalent in middle-income countries.¹⁰ In the view of above observations the present study was conducted to evaluate the clinical and demographic profile and various aetiologies of visual impairment in the Bihar Region.

Material and Methods

A prospective observational study was conducted in the Department of Ophthalmology, Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India, for 1 year, after taking the approval of the protocol review committee and institutional ethics committee.

Methodology

Since seeking informed consent, the patient or family, if the patient was not in good health, were asked to include a comprehensive medical history. Both patients were told about the procedure's technique, risks, advantages, effects, and related complications. In this study, 200 patients were enrolled. Patients from Bihar who visited the Ophthalmology speciality outreach clinic, regardless of their age group, were included in the report. On the basis of a pre-tested pre-designed proforma, informed consent was received, patients were interviewed, and information was entered. Each research participant's socio-demographic information was collected. History was obtained regarding any ocular complaints, and a detailed ophthalmic examination was done which included a detailed torch light examination, assessment of visual acuity using Snellen's distance vision chart and Times New Roman near vision chart, tonometry using Schiottz tonometer, and fundus examination using direct ophthalmoscope.

Statistical analysis

Data entry was done using Microsoft Excel 2010 version and statistical analysis included percentages and proportions.

Results

The majority of the participants 88(44%) were middle-aged belonging to the age group of 40-60 years; while the least 13(6.5%) were those aged below 20 years (Table 1).

120(60%) out of 200 participants were females, while 80(40%) were males, i.e. they were almost equally distributed.

Table 1: Age distribution of the study participants

Sex	Number of patients=200	Percentage (%)
Male	120	60
Female	80	40
Age group (years)		
Below 20	13	6.5
20-40	41	20.5
40-60	88	44
60-80	41	20.5
Above 80	17	8.5

The majority i.e. 140(70%) participants used L.P.G as fuel at home; while coal, wood or cow dung was used by 46(23%) and 14(7%) used both. The majority of the participants i.e. 90(45%) had completed higher secondary education or graduation, 42(21%) had completed post-graduation or were professionals. Only a minority of 14 participants (7%) were illiterates. The participants studied were grouped into; no visual impairment i.e. 148(74%), visual impairment Grade 1 i.e. 31(15.5%), Grade 2 i.e. 10(5.5%) or blindness Grade 3 i.e.7(3.5%), Grade 4 i.e. 3 (1.5%) based on WHO classification of low vision (Table 2).

Table 2: Visual impairment among study participants

Categories of visual impairment	Vision	Number of patients	Percentage
No visual impairment	>6/18	148	74
Visual impairment			
Category 1	6/18 - 6/60	31	15.5
Category 2	6/60 - 3/60	11	5.5
Blindness			
Category 3	3/60 - 1/60	7	3.5
Category 4	1/60 - PL	3	1.5

Out of the 200 patients that were studied, majority i.e. 168 patients (84%) had refractive errors. In some cases, more than one type of refractive error was noted.

Majority of the participants 62(31%) had hypermetropia, followed by myopia 40(20%) and astigmatism 30(15%). In 70% of individuals aged 40 years and above, presbyopia was noted. 4 patient (2%) had a nebular corneal opacity, which had developed following trauma with an iron nail. 47 patients i.e. 23.5% had cataract; out of which, 32 patients had bilateral cataract, and 15 patients had unilateral cataract. 13 patients (6.5%) that were studied were found to have glaucoma. 6 patients were aged more than 40 years and had primary open angle glaucoma. 7 patients (3.5%) had optic atrophy due to causes other than glaucoma. 10 participants (5%) presented with retinopathy due to diabetes or hypertension. 8 patients i.e 4% had macular diseases such as age related or hereditary macular degeneration (Table 3).

Table 3: Distribution of ocular morbidities

Ocular morbidities	Number of patients	Percentage (%)
Corneal opacities	4	2
Cataract	47	23.5

Aphakia	4	2
Refractive Errors	168	84
Glaucoma	13	6.5
Optic Atrophy	7	3.5
Retinopathies	10	5
Macular diseases	8	4

Discussion

Globally, it is estimated that there were over 38 million blind persons in the world, and 110 million people with low vision in 1994¹¹, which has increased to 324 million in 2012.¹² 90% of the world's visually impaired live in developing countries, with the main causes of blindness being cataract, trachoma, glaucoma, onchocerciasis, xerophthalmia, diabetic retinopathy and age related macular degeneration.¹³ Hence it is important that these changes are detected at their earliest so that visual disability can be prevented. In our study, Out of the 200 patients that were studied, majority i.e. 168 patients (84%) had refractive errors. In some cases, more than one type of refractive error was noted. Majority of the participants 62(31%) had hypermetropia, followed by myopia 40(20%) and astigmatism 30(15%). In 70% of individuals aged 40 years and above, presbyopia was noted. 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.¹⁴ The high prevalence of hypermetropia in our study compared to that found by similar such studies by Haq et al.¹⁵ could be due to a higher prevalence of cataract found in our study. There are several studies done in India which have reported a high prevalence of hypermetropia after the 5th decade of life,^{16,17} which correlate with the findings of our study. In our study, we also observed that the proportion of uncorrected refractive errors were greater in the lower educated group than the higher educated group, which is similar to that found in a study conducted by Prema et al.¹⁸ and another study by Dandona et al.,¹⁹ where they found that the proportion of uncorrected refractive error was higher among the lower educated individuals than the higher educated individuals. In this study 4 patients (2%) had a nebular corneal opacity, which had developed following trauma with an iron nail. Similar results (0.4%) were found by Agarwal et al. in their study.¹⁴ However this value is much lower than that found in a study by Baldev et al.²⁰ in Northern India (30.5%). This shows greater level of awareness about ocular injuries and their prevention in the Bihar community, as well as good healthcare facilities and promptness to report to the ophthalmologist in the event of trauma. 47 patients i.e. 23.5% had cataract; out of which, 32 patients had bilateral cataract, and 15 patients had unilateral cataract. Our findings are similar to that reported by Dandona et al.²¹ in Southern India (25.3%). The highest rates of cataract were among elderly individuals, those from lower social classes using coal wood and cow dung as fuel, and among illiterates. Younger individuals who presented with cataracts were those following trauma, or other complicated cataracts following uveitis, or keratitis. 32% of the patients who had cataract were illiterates and 31% were those using coal, wood or cow dung as fuel, suggesting lower socio economic background. Similar results were found by Haq et al.¹⁵, where 32.8% were illiterates and 24.9% belonged to low socio economic background. The high percentage of patients with cataract is probably due to higher average life expectancy in Bihar, low socio economic status, illiteracy and lack of awareness about the treatable nature of cataract. 13 patients (6.5%) that were studied were found to have glaucoma. 6 patients were aged more than 40 years and had primary open angle glaucoma. The prevalence of glaucoma in our study is lower than that found by Baldev et al.²⁰ in their study (11.1%). In our study, 7 patients (3.5%) had optic atrophy due to causes other than glaucoma. 10 participants (5%) presented with retinopathy due to diabetes or

hypertension. 8 patients i.e 4% had macular diseases such as age related or hereditary macular degeneration

Conclusion

According to the findings of this report, health education and raising public consciousness are the only ways for them to be diagnosed and handled at the earliest possible time. This will lessen the stigma of vision deficiency and blindness, which will reduce our society's economic burden.

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