



EVALUATION OF DIFFERENT CAUSES OF BLINDNESS IN PATIENTS ATTENDING OPHTHALMOLOGY OUT PATIENTS DEPARTMENT OF TERTIARY CARE TEACHING HOSPITAL FOR DISABILITY CERTIFICATE.

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ABSTRACT

Aim and Objectives: To evaluate different causes of blindness in patients seeking disability certificate in Ophthalmology Department OPD, GMERS Medical College and Civil Hospital, Gandhinagar. **Methods:**

This cross sectional clinical study was conducted on 100 patients in the Department of Ophthalmology, GMERS Medical College, Gandhinagar, Gujarat over a period from September 2022 to September 2023. **Result:** The study included 100 patients, with 72 males and 28 females, mostly aged 21–30 years. Among them, 77 had bilateral blindness, while 23 had unilateral blindness (10 in the right eye and 13 in the left). Patients had conditions like Phthisis bulbi (21.47%), coloboma (15.82%), amblyopia (13.56%), retinitis pigmentosa (12.43%), advance glaucoma (9.04%) and other causes. Blindness causes were categorized into anterior segment (7.34%), posterior segment (86.44%), and other causes (6.22%). Curable blindness was 22.03%, while 77.97% had non-curable conditions. Congenital blindness was 50.12%. Retinal blindness was 63.83%, and corneal blindness was 4.52%. **Conclusion:** The most common cause of blindness was Phthisis bulbi, followed by coloboma, with posterior segment causes being more frequent than anterior segment causes. To reduce blindness, preventive measures like school health programs, genetic counseling, and disease screenings (for conditions like ROP, diabetic retinopathy, and glaucoma) should be implemented. Outreach activities can help to assess causes in the general population, and rehabilitation with low vision aids can improve the quality of life for visually impaired individuals.

KEYWORDS : Blindness, Disability certificate, Low vision aids, Rehabilitation

INTRODUCTION

India having a population exceeding one billion, blindness has been recognized as a significant public health issue due to its widespread prevalence and profound impact on individuals and society at large.^{[1] [2]} Vision is considered the most vital of all five senses as it plays a crucial role in cognitive development from early childhood through adulthood. The loss of vision leads to impairments that cause limitations and restrictions in social, economic, and physical activities, ultimately resulting in visual handicap. However, it is encouraging to note that more than two-thirds of vision impairment and blindness cases are preventable or treatable through timely interventions.^[3]

India was the first country in the world to launch the National Program for Control of Blindness in 1976 with the goal of reducing blindness prevalence to 0.25% by the year 2025. In India, registering as blind or visually impaired is entirely voluntary and it is carried out by a duly constituted board that consists of the district ophthalmic surgeon and the ophthalmologist from the medical college.^{[4][5]}

This program strongly emphasis on planning and policy creation using evidence-based practices. Precisely gathered data has long served as a guide for strategy development, execution, and identification.^[6]

According to the World Health Organization, blindness is

defined as having a best corrected visual acuity of 3/60 (Snellen) or below, or a visual field in the better eye 10 degrees or less in its widest diameter.^[7]

The government provides certain advantages to aid in the rehabilitation of those who are blind or visually impaired. In order to be eligible for any benefits or concessions, an individual must have a disability that is at least 40%, according to the Ministry of Social Justice and Empowerment of the Government of India.^[8]

The purpose of this study is to analyze secondary data on impaired people based on their socio demographic traits, level of disability,^[9] cause of visual impairment, and employment status.

Aim

To evaluate different causes of blindness in patients seeking disability certificate in Ophthalmology Department OPD, GMERS Medical College and Civil Hospital, Gandhinagar.

Objectives

- To determine different causes of blindness among study participants
- To determine percentage of blindness among study participants

MATERIALS AND METHODS

This cross-sectional study was conducted to evaluate the causes and prevalence of blindness among patients attending the Ophthalmology Outpatient Department (OPD) for disability certification. The study took place in the Department of Ophthalmology at GMERS Medical College, Gandhinagar, which caters to a diverse population from both urban and rural backgrounds. The study was conducted over a period from September 2022 to September 2023.

Inclusion Criteria

All patients visiting Ophthalmology outpatient department for blindness certificate

Exclusion Criteria

Patient doing malingering.

Prior to the commencement of the study, ethical approval was obtained from the Institutional Ethics Committee (IEC No. GMERS/MCG/IEC/51/2022, dated 12/10/2022). Data collection involved recording demographic details such as age, sex, and the causes of decreased vision or blindness. The percentage of disability was calculated based on guidelines issued by the Government of India for the evaluation and certification of disabilities. The patient underwent the following examination

1. History taking and systemic examination
2. Best Corrected Visual Acuity on Snellen's Chart
3. Slit lamp examination for anterior segment evaluation
4. Intraocular pressure measurement by Goldman's applanation tonometer
5. Pupils were dilated by topical mydriatics (0.8 % Tropicamide and 5% Phenylephrine), and fundus examination was done by 90 D slit lamp biomicroscopy as well as 20 D indirect ophthalmoscopy.
6. Ocular Coherence Tomography (OCT) done by Cirrus HD OCT Model 500 machine.
7. Ultrasound B scan.

RESULTS

A total of 100 patients were included in our study out of which 72 were males and the rest 28 were females.

The majority of patients were in the age group of 21–30 years. 23 patients were in the 21–30 age group. Only 1 patient is in the age group of 71–80 years. (Chart I)

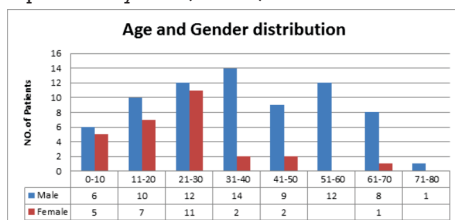


Chart I Age Group and Gender Distribution

In this study, 77 patients had bilateral blindness and 23 patients had unilateral blindness. Among this 23 unilateral blindness patient 10 patients had blindness in right eye and 13 patients had blindness in left eye. 100 Percent of blindness patients were highest, which was 44. (Chart II)

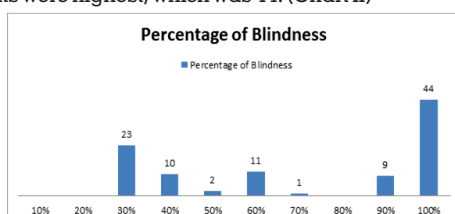


Chart II Percentage of Blindness in Study Population

There were 100 patients in the study. We studied both eyes of 100 patients, out of which 23 eyes were normal. Table I shows

different cause of blindness according to etiology in study population.

Different causes of blindness can be divided into three groups.

1. Anterior segment cause (Table II): 13
2. Posterior segment cause (Table III): 153
3. Other cause (empty socket and eviscerated eye): 11

Table I Different Cause Of Blindness According to Etiology in Study Population.

Causes	NO. of Eyes	Percentage
Phthisis Bulbi	38	21.47%
Coloboma	28	15.82%
Amblyopia	24	13.56%
Retinitis Pigmentosa	22	12.43%
Advanced Glaucoma	16	9.04%
Empty socket, Eviscerated Eye	11	6.22%
Corneal opacity, Adherent leucoma	5	2.83%
Advanced ROP	5	2.83%
Pathological Myopia	4	2.26%
Primary Optic atrophy	4	2.26%
Congenital Cataract	4	2.26%
Severe Retinal degeneration	3	1.69%
Closed Funnel Retinal detachment, Silicone oil filled eye	3	1.69%
PHPV	2	1.13%
Macular Dystrophy	2	1.13%
Failed corneal Graft	2	1.13%
Chronic severe Diabetic Retinopathy, Chronic diabetic Macular edema	2	1.13%
Severe Corneal degeneration	1	0.56%
Calcified Absorbed cataract	1	0.56%

Table II Anterior Segment Causes of Blindness in Study Population

Anterior Segment Causes of blindness	NO. of Eyes affected	Percentage
Corneal opacity and adherent leucoma	5	2.83%
Congenital cataract	4	2.26%
Failed corneal graft	2	1.13%
Severe corneal degeneration	1	0.56%
Calcified absorbed cataract	1	0.56%
Total	13	7.34%

Table III Posterior Segment Causes of Blindness in Study Population.

Posterior Segment Causes of blindness	NO. of Eyes	Percentage
Phthisis bulbi	38	21.47%
Fundal Coloboma	28	15.82%
Amblyopia	24	13.56%
Retinitis pigmentosa	22	12.43%
Advanced glaucoma	16	9.04%
Advanced ROP	5	2.83%
Pathological Myopia	4	2.26%
Primary optic atrophy	4	2.26%
Severe Retinal degeneration	3	1.69%
Closed funnel Retinal detachment and silicone oil filled eye	3	1.69%
PHPV	2	1.13%
Chronic severe diabetic retinopathy and chronic diabetic macular edema	2	1.13%
Macular dystrophy	2	1.13%
Total	153	86.44%

39 eyes had a cause for which treatment could have been possible, which is curable blindness. In such cases, we gave a temporary blindness certificate, while the rest, 138 eyes, had non-curable blindness. (Chart III) (Chart IV)

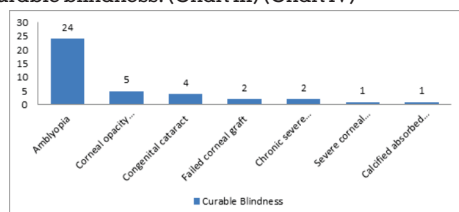


Chart III Curable Blindness in Study Population

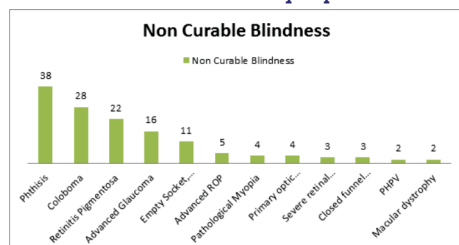


Chart IV Non Curable Blindness in Study Population

70 eyes had congenital blindness 111 eyes had retinal blindness and 8 eyes had corneal blindness.

DISCUSSION

Age Distribution

In our study, the highest number of patients (23%) were in the 21–30-year age group and lowest number of patients (1%) were observed in the 71–80-year age group. This age distribution pattern is consistent with other studies for example Dr. Suresh Chandra Swain et al.'s study in Odisha^[12] and Kritika Palchoudhury et al.'s study in West Bengal^[11].

The predominance of younger adults in these studies may reflect the fact that visual impairment at this stage of life significantly impacts productivity and quality of life, prompting individuals to seek medical care.

Prevalence and Severity of Blindness

In our study, the severity of blindness varied: 100% blindness was observed in 44 patients, while partial blindness ranged from 30% to 90% in the remaining cases. Similar result seen in study done by Srinivasan Siddegowda et al.^[10] and Dr. Suresh Chandra Swain's study in Odisha^[12]. Dr. Sanjeev K. Nainiwal's study in Rajasthan showed that 100% blindness affected 65.09% of patients, while other degrees of blindness (40–75%) were also significant^[3].

These variations may result from differences in sample sizes, geographical factors, access to healthcare services, and the prevalence of specific ocular diseases.

Causes of Blindness

Out of 200 eyes examined in our study, 23 were normal. Phthisis bulbi emerged as the most common cause of blindness, affecting 21.47% of eyes, followed by coloboma (15.82%), amblyopia (13.56%), retinitis pigmentosa (12.43%), and advanced glaucoma (9.04%). Less common causes included corneal opacity, congenital cataract, macular dystrophy, and diabetic retinopathy.

Similar patterns were observed in other studies. Dr. Uday Mohite et al. reported phthisis bulbi (15.5%) as the leading cause, along with amblyopia, congenital malformations, cataract, and optic atrophy^[13]. Srinivas Siddegowda et al. found congenital anomalies (21.05%), retinitis pigmentosa (17.76%), and optic atrophy (13.81%) as major causes^[10].

In our study, posterior segment disorders were the leading causes of blindness (86.44%), followed by anterior segment disorders (7.34%) and other causes (6.22%). Kritika Palchoudhury et al. reported 15% anterior segment involvement and 77.5% posterior segment causes^[11]. Dr. Suresh Chandra Swain's study also highlighted posterior segment diseases as the major contributors (58.24%)^[12].

CONCLUSION

Our study concluded that males of younger age group (21 to 30 years) predominated. Posterior segment diseases were the leading causes of blindness and congenital causes played a significant role.

The importance of early detection of curable causes of blindness like retinopathy of prematurity, diabetic retinopathy, and glaucoma by improved healthcare access and targeted public health interventions was noted. Future strategies should focus on congenital blindness prevention, early intervention for retinal diseases, and enhanced awareness programs for diabetes and glaucoma, particularly in rural and underserved areas.

Health education and genetic counseling are essential in reducing the incidence of congenital and hereditary causes of blindness. Early screening and timely detection play a key role in preventing curable blindness. Furthermore, patients with visual disabilities should be supported through rehabilitation programs, providing low vision aids to enhance their functional abilities and improve their overall quality of life.

REFERENCES

- Bourne RR, Flaxman SR, Braithwaite T, Cicinelli MV, Das A, Jonas JB, et al. Magnitude, temporal trends, and projections of the global prevalence of blindness and distance and near vision impairment: A systematic review and meta-analysis. *Lancet Glob Health* 2017;5:e888–97.
- Stevens GA, White RA, Flaxman SR, Price H, Jonas JB, Keeffe J, et al. Global prevalence of vision impairment and blindness: Magnitude and temporal trends, 1990–2010. *Ophthalmology* 2013;120:2377–84.
- Priya M, Mehrotra N, Tripathi S, Singh KG, Mishra RM, Agarwal A. Prevalence and causes of blindness in patients coming to a tertiary eye care centre in western Uttar Pradesh. *International Journal of Research in Medical Sciences*. 2023 Aug;11(8):2982.
- Nainiwal, Sanjeev & Jain, Prateek. (2016). Analysis of Visually Handicap Patients Attending Outpatient Department of a Tertiary Eye Care Hospital for Visual Handicap Certification in Central Rajasthan, India. *IOSR Journal of Dental and Medical Sciences*. 15. 36-39. 10.9790/0853-1505023639.
- Guidelines for evaluation of various disabilities and procedure for certification. The Gazette of India extraordinary. Part I. Section 1. No 154.
- Dandona L, Dandona R, John RK. Estimation of blindness in India from 2000 through 2020: implications for the blindness control policy. *Natl Med J India*. 2001 Nov-Dec;14(6):327-34. PMID: 11804362.
- World Health Organization. Global Initiative for the Elimination of Avoidable Blindness WHO/PBL/97.61. Geneva: World Health Organization; 1997.
- Ministry of Social Justice and Empowerment. Guidelines for Evaluation of Various Disabilities and Procedure for Certification. Notification Dated The Gazette of India Extraordinary, No 154. 2001.
- Ambastha A, Kusumesh R, Sinha S, Sinha BP, Bhaskar G. Causes of visual impairment in applications for blindness certificates in a tertiary center of Bihar and its role in health planning. *Indian J Ophthalmol*. 2019 Feb;67(2):204-208. doi: 10.4103/ijo.IJO_837_18. PMID: 30672470; PMCID: PMC6376837.
- Siddegowda S, Venkataramana P A, Ramamurthy M T, Shiv P. A study to evaluate the cause of blindness/low vision among certified visually disabled individuals in Mandya district of Karnataka. *Indian J ClinExpOphthalmol* 2016;2(3):238-241.
- Palchoudhury, Kritika & Karmakar, Sagar. (2020). A Study to Evaluate the Causes of Visual Impairment amongst Patients Seeking Visual Disability Certificate. *Journal of Evidence Based Medicine and Healthcare*. 7. 2399-2403. 10.18410/jebmh/2020/497.
- Suresh Chandra Swain, Deepak Choudhury, Sumita Mohapatra, Prasant Kumar Nanda, Balakrushna Samantray, Kumari Krishna Patra and Bijay Kumar Pattnaik. (2018); A Study to determine visual disability in a tertiary eye care centre in state of Odisha. *Int. J. of Adv. Res.* 6 (Mar). 1328-1330 (ISSN 2320-5407).
- Uday S. Mohite, Dr. Sneha G. Patil, Causes of Visual Disability in Patients Seeking Visual Disability Certificates Attending Tertiary Care Centre- A Descriptive Study., *Dr. PARIPEX-INDIAN JOURNAL OF RESEARCH* :May-2021;10(5) May-2021: 2250 – 1991