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ORIGINAL RESEARCH

Medicolegal Visual Disability -Demographic Profile And Ocular Pathologies In Patients Of All Age Groups Seeking Visual Disability Certificate In A Tertiary Care Centre

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ABSTRACT

Background: Ocular pathologies significantly impact quality of life. Understanding the spectrum of conditions and their prevalence is crucial for effective prevention and management.The aim of the study is to determine the various types of congenital or acquired disorders causing permanent visual disability and their association with age, sex and visual acuity in patients attending Disability Clinic of Department of Ophthalmology, Jorhat Medical College and Hospital, Assam, from January 2024 to July 2024.

Methods: A hospital-based cross-sectional study of patient records with visual impairment seeking visual disability certificate was conducted. Data collected included demographics, visual acuity, ocular diagnoses and associated comorbidities.

Results: Out of 80 cases analyzed, 54 were males and 26 were females (Male: Female = 2.07:1) The most common age group at presentation was 11-20 years (25%) belonging to rural population (66.25%) and 20% of cases were congenital. The most common ocular anomaly noted was microphthalmos (23.75%) followed by uveal coloboma (18.75%) and pthisis bulbi (11.25%).

Conclusion: This study provides valuable insights into the burden of visual impairment in the region served by the hospital. The findings can contribute to public health initiatives, resource allocation and clinical management strategies to improve the quality of life of individuals with visual impairment and certified visual disabilities.

Keywords: Ocular pathologies, Visual impairment, visual disability, Tertiary care hospital, Rural population, Congenital, Microphthalmos.

INTRODUCTION

Visual impairment is a significant global health problem affecting millions worldwide, impacting their daily lives, self dependence, and well-beingand is a growing concern, especially in developing countries. Although some vision problems are treatable, others are not. The Lancet reported in 2015 that visual impairment is the third leading cause of disability globally, after anaemia and hearing loss.[1] It hinders daily tasks and negatively affects social acceptance, disproportionately affecting those with lower socioeconomic status, who are twice as likely to experience blindness. Visual disability registries are crucial for public health programs and research, providing data on the causes, distribution, and prevention of visual disability and blindness.

Globally, over 2.2 billion people have vision impairments, with 1 billion of those cases being preventable or treatable.[3] In India, 62 million people are visually impaired: 54 million with low vision and 8 million with blindness.[4]Despite India's pioneering public health programs, cataracts and refractive errors, often preventable, remain the main causes. Blindness significantly impacts individuals, families, and communities, both emotionally and economically, with about 80% of Indian blindness cases potentially avoidable. However, under-reporting due to inadequate record-keeping and the voluntary nature of registration hinders effective intervention. Analysing visual impairment among disability certificate applicants is crucial for healthcare planning and resource allocation.

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This study examined records of visual disability certificate applicants at an Assam hospital to understand regional causes of visual impairment and blindness. Regional analysis is important due to varying causes, which is essential for effective eye care service planning. While Uttar Pradesh has the highest number of visually impaired individuals in India (15.5%), Assam's share is 1.79%.[5] National programs like the NPCBVI have successfully reduced blindness rates across India.[6]

This study uses the WHO definitions of blindness and low vision. "Low vision" is defined as visual acuity less than 6/18 but equal to or better than 3/60 or a corresponding visual field loss to less than 20 degrees in the better eye with best correction. "Blindness" is defined as visual acuity less than 3/60, or a corresponding visual field loss to less than 10 degrees in the better eye with best correction. "Visual impairment" encompasses both low vision and blindness.[7]

MATERIALS AND METHODS

Aims and objectives:

1. To determine the causes of visual impairment and blindness amongst patients attending the Disability Clinic, Department of Ophthalmology, Jorhat Medical College and Hospital.
2. To identify the avoidable causes of visual impairment and blindness.
3. To provide spectacles, low vision aids and ophthalmic treatments where indicated.

Place of study: Jorhat Medical College and Hospital, Assam

Study Design: Hospital-based cross-sectional study

Duration of study: 7 months, January 2024 to July 2024

Selection of Patients: Allpatients applying for visual disability certificates exceptthose in exclusion criteria, presented to the Disability Clinic, Department of Ophthalmology, Jorhat Medical College and Hospital, Assam during the study period.

Exclusion criteria:

1. Patients withvisual disability <40%
2.Patients presenting with treatable and reversible causes of visual impairment

Instruments to be used:

1. Snellen's Visual Acuity Chart
2. Slit lamp biomicroscope
3. +90D lens for use with slit lamp biomicroscope
4. Direct Ophthalmoscope
5. Indirect ophthalmoscope with +20D lens
6. Schiotz tonometer/ Non-Contact Tonometer
7. Digital Fundus Photography
8. SD-OCT, whenever indicated
10. USG B scan, whenever indicated

Methodology: All patients were subjected to a comprehensive medical, generaland ophthalmological examination using a standardized form. This included gathering medical history, personal history including questions to roughly determine his/her socioeconomic status and performing general and eye-specific examinations. Visual acuity was tested using a Snellen chart. The anterior segment was examined, and the posterior segment (fundus) was examined with dilated pupils when necessary. If further evaluation was needed, digital fundus photography, USG B Scanand Optical Coherence Tomography (OCT) procedures were done. Visual impairment was categorised according to WHO standards.

The study focused on determining the causes of vision loss and whether they were preventable. Patients with avoidable conditions (like cataracts or refractive errors) received treatmentand their vision was reassessed. The final analysis of visual acuity percentages excluded these treatable cases. Out of the 94 applicants, 80 were approved for disability certificates. We retrospectively reviewed the records of these 80 individuals using a structured form to collect socio-demographic information (age, sex, education, occupation) and clinical history (cause of blindness, percentage of blindness, duration). Data was compiled and analysed using MS Excel 2021, categorizing visual impairment according to Indian standard guidelines. Visual impairmentequal to or greater than 40% was the threshold for disability certification in this study.

According to "**The Gazette of India**", Ministry of Social justice and Empowerment Guidelines 2018, evaluation and procedure for certification of various specified disabilities in India has set in the following categories:[7,8]

Table 1: Ministry of Social justice and Empowerment Guidelines 2018

Better eye Best Corrected	Worse eye Best corrected	PercentImpairment	Disability Category
6/6 to 6/18	6/6 to 6/18	0%	0
	6/24 to 6/60	10%	0
	Less than 6/60 to3/60	20%	I
	Less than 3/60 to No Light Perception	30%	II (One eyed person)
6/24 to 6/60 or Visual field less than 40 up	6/24 to 6/60	40%	III a (low

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to 20 degrees around centre of fixation or hemianopia involving macula			vision)
	Less than 6/60 to 3/60	50%	III b (low vision)
	Less than 3/60 to NoLight Perception	60%	III c (low vision)
Less than 6/60 to 3/60 or Visual field less than 20 up to 10 degrees around centre of fixation	Less than 6/60 to 3/60	70%	III d (low vision)
	Less than 3/60 to No Light perception	80%	III e (low vision)
Less than 3/60 to 1/60 or Visual fieldless than 10 degree around centre of fixation	Less than 3/60 to No Light Perception	90%	IV a (Blindness)
Only HMCF Only Light Perception No Light Perception	Only HMCF Only Light Perception No Light Perception	100%	IV b (Blindness)

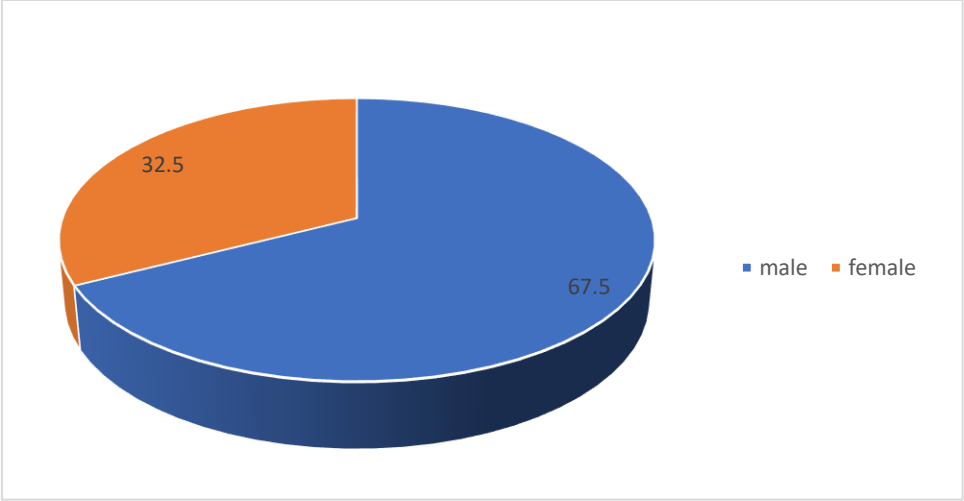
RESULTS

1. Gender distribution:

Table 2: Gender distribution:

Gender	Number(n)	Percentage %
Male	54	67.5
Female	26	32.5
Total	80	100

Figure 1: Gender distribution: In the present study, majority of patients were male i.e67.5% (n-54) and male:female :: 2.07:1.



2. Age distribution:

Table 3: Age distribution

Age distribution (In years)	Number (n)	Percentage %
0-10	10	12.5
11-20	20	25
21-30	17	21.25
31-40	12	15
41-50	10	12.5
51-60	8	10
>60	3	3.75
Total	80	100

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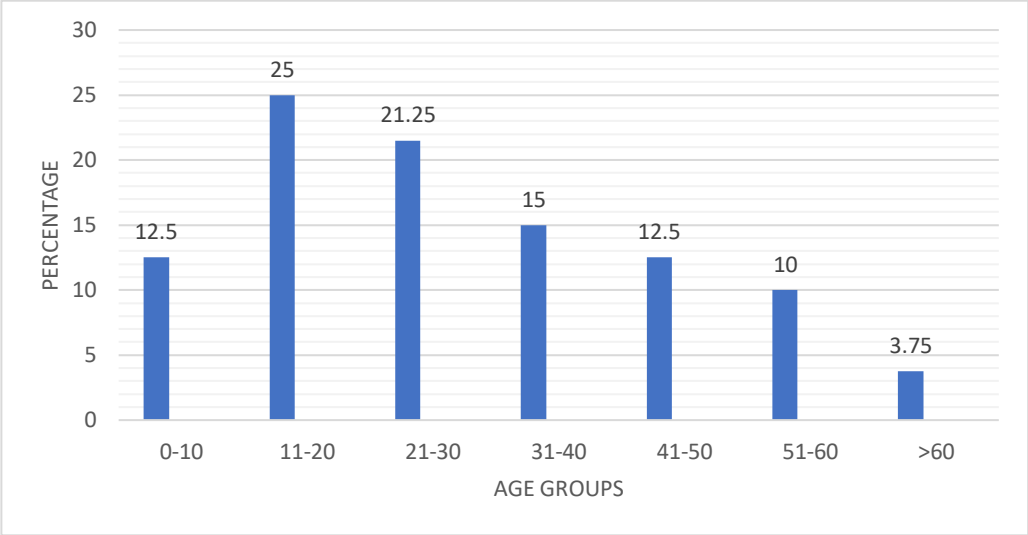
Figure 2: Age distribution

The most common age group at presentation was between 11-20 years i.e25% (n-20).

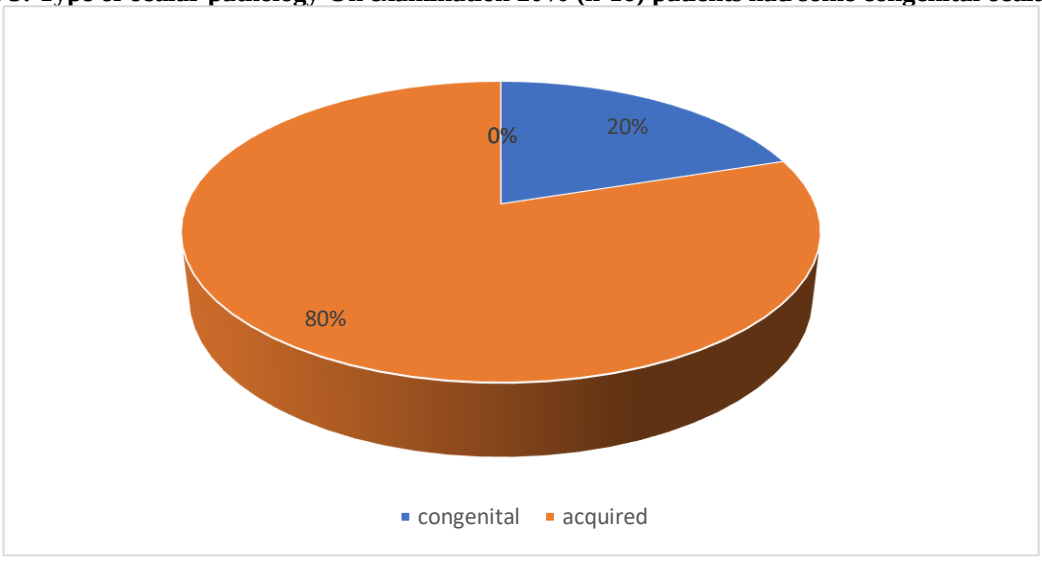


3. Type of ocular pathology:

Table 4: Type of ocular pathology

Type of ocular pathology	Number (n)	Percentage %
Acquired	16	20
Congenital	64	80
Total	80	100

Figure 3: Type of ocular pathology On examination 20% (n-16) patients had some congenital ocular



anomaly and the rest 80% (n-64) had acquired ocular disorders.

4. Visual Disability Percentage distribution:

Table 5: Disability Percentage Distribution.

Percentage of ocular disability	Number (n)	Percentage %
40	42	52.5
60	21	26.25
80	7	8.75
100	10	12.5
Total	80	100

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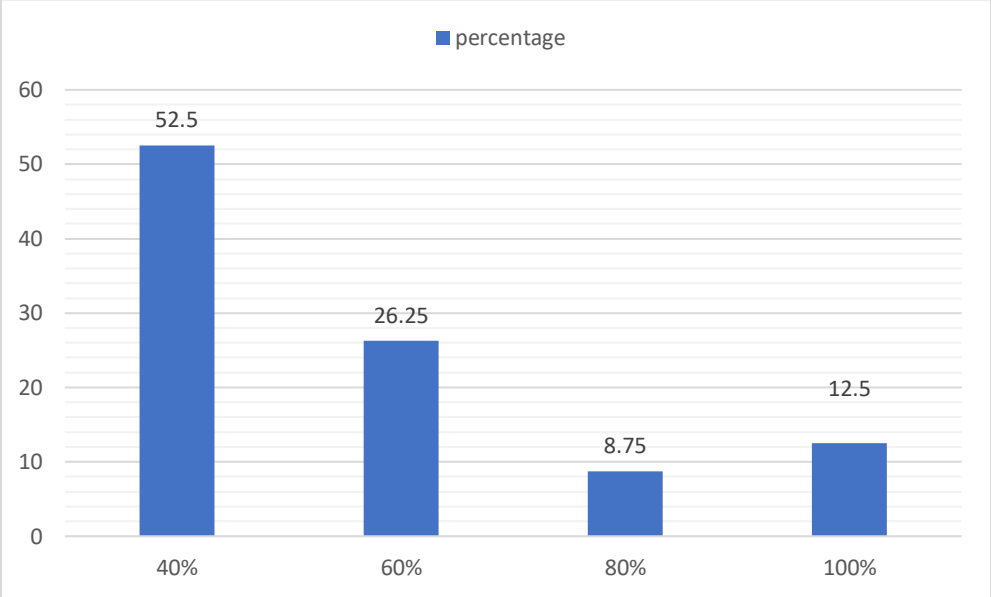
Figure 4: Disability Percentage Distribution



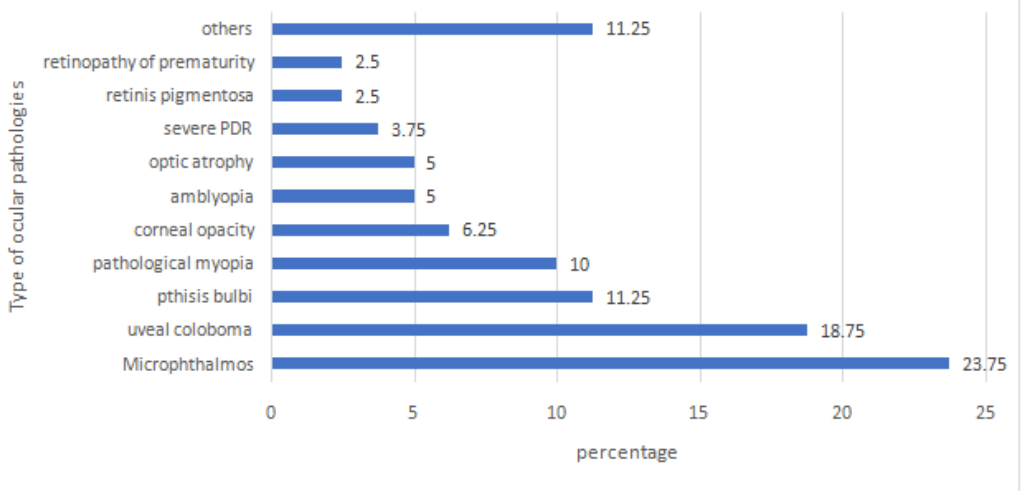
In the study, 52.5%(n-42) patients had 40%visual impairment followed by 26.25%(n-21) patients of 60% visual impairment.

5. Causes of Visual Disability:

Table 6: Causes of Visual Disability

Causes of Visual Disability	Number (n)	Percentage %
Microphthalmos	19	23.75
Uveal coloboma	15	18.75
Pthsisi bulbi	9	11.25
Pathological myopia	8	10
Corneal opacity	5	6.25
Amblyopia	4	5
Optic atrophy	4	5
Retinis pigmentosa	3	3.75
Severe PDR	2	2.5
Retinopathy of prematurity	2	2.5
Others	9	11.25
Total	80	100

Figure 7: Causes of Visual Disability The most common ocular anomaly noted was microphthalmosi.e 23.75% (n-19) followed by uveal coloboma 18.75%(n-15) and phthisis bulbi 11.25% (n-9).



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6. Frequency of pathology:

Table 7: Most frequent pathology as per age group

Age group (years)	Most frequent pathology detected
0-10	Microphthalmos
11-20	Iris and choroidal coloboma
21-30	Pthisis bulbi
31-40	Corneal opacity
41-50	Optic atrophy
51-60	Diabetic retinopathy and its complications
>60	Age related macular degeneration

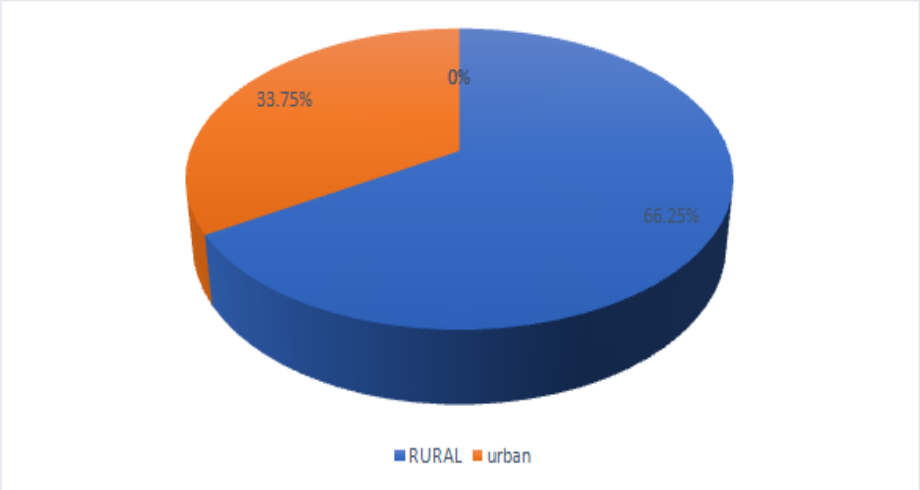
The most frequent pathology observed in the age group of 0-10 years is microphthalmos, uveal coloboma in 11-20 years, pthisis bulbi in 21-30 years, corneal opacity in 31-40 years, optic atrophy in 41-50 years, diabetic retinopathy and its complications in 51-60 years and age related macular degeneration (ARMD) in the age group >60 years.

7. Demographic distribution:

Table 8: Demographic distribution

Area of residence	Number (n)	Percentage %
Rural	53	66.25
Urban	27	33.75
Total	80	100

Figure 7: Demographic distribution



The majority of patients under the present study resided in rural areas i.e66.25% (n-53) and rest 33.75% (n-27) patients were from urban regions.

8. Socioeconomic status:

Table 9:Socioeconomic Status

Socioeconomic category	Number (n)	Percentage %
Lower	34	42.5
Upper lower	21	26.25
Lower middle	12	15
Upper middle	8	10
Upper	5	6.25
Total	80	100

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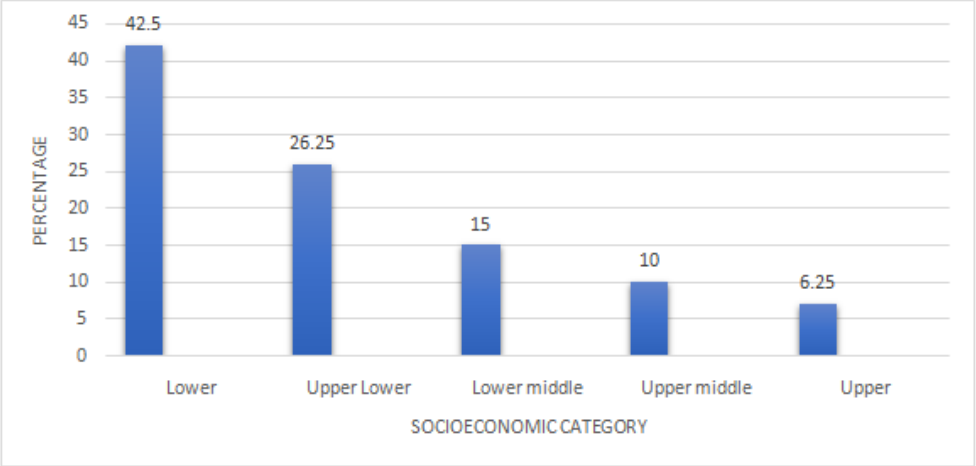
Figure 8: Socioeconomic status



Majority of the patients belong to lower socioeconomic group i.e42.5%(n-34).

DISCUSSION

1. Out of the 94 applications in our study, 80 were approved and 14 were rejected. Disability certificates for visual impairment and blindness (over 40%) provide recipients with various benefits, including job reservations, travel discounts, tax breaks, disability allowances, and educational reservations. These benefits may explain the higher number of male applicants seen in our study (67.5% male vs 32.5% female), (2.07:1), a trend also observed by Patil et al. and Ghose S et al, who found the number of males were more than females (male: female ratio was 1.5:1).[11,12]

2. In the study conducted by Ghosh S et al, in 2008, the most common age group was also between 11- 20 years (27.74%).[12] which is similar to our study 11-20 years (25%) Whereas, Anita Ambastha et al found 15-45 years to be the most common age groups in their study[13]likely due to students and job seekers seeking reservation benefits. School eye screenings and free eyeglasses through national blindness control programs are crucial for early detection and prevention of visual impairment, particularly in treatable conditions.

3. In this study, 20% patients had some congenital anomaly and the rest 80% had acquired disorders. In a similar study conducted by Siddegowda S et al, Venkataramana PA et al, Ramamurthy MT et al, and Shiveshi P et al, 21.05% patients had a congenital ocular condition.[7] The large percentage of acquired disorders is seen due to the fact that these conditions, most of which preventable, did not receive adequate management at an early stage.

4. In the present study, 52.5% patients had 40% visual impairment followed by 26.25% patients of 60% visual impairment. In a similar study conducted by S Bandyopadhyay S et al, Bandyopadhyay M et al, Biswas J et al, Saha M et al, Dey AK et al, Chakrabarti A et al, 72.98% patients had 100% visual impairment.[17] This could again be attributed to the delayed consultation with ophthalmologists until the visual acuity deteriorates to category III and worse.

5. This study found that most patients (66.5%) lived in rural areas, compared to 33.5% from urban areas. This aligns with national statistics from 2016, which showed a similar distribution of disabled individuals (69% rural, 31% urban).[5]This disparity may be due to a lack of awareness in rural communities about the importance of early diagnosis and treatment. Rural residents often seek medical help at later stages of disease, when conditions are irreversible, leaving them with no option but to apply for a disability certificate.

6. Most common ocular pathology found in our study was congenital microphthalmos and Anophthalmus (17%), followed by coloboma of eye (14%) and pthisis bulbi (11%). In the study conducted by Ghosh S et al, the most frequent condition observed was phthisis bulbi (17.74%) followed by microphthalmos (13.23%).[12] A study by Bandyopadhyay et al. found that among visually disabled people in a West Bengal district, the most common eye abnormality was optic atrophy (15.53%), followed by microphthalmos (12.25%).[17]

CONCLUSION

Visual disability has a profound, lifelong impact on individuals and hinders socioeconomic development at personal, societal, and national levels. In India, a developing country, much of this visual impairment and blindness is preventable. Irreversible blindness from conditions like diabetic retinopathy, glaucoma, or trauma highlights the need for early detection before significant vision loss occurs. Understanding the causes of blindness is crucial for health planners to develop strategies for reducing avoidable blindness, monitoring existing government programs, and gaining insights into regional disease trends and healthcare delivery.

The study's findings, showing a high number of congenital eye diseases, suggest a need for increased access to genetic counselling, especially for young adults along with antenatal anomaly scan check-up for pregnant women. These conditions may be linked

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to rising rates of consanguinity (close blood relations) and a lack of available genetic counselling services.

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