Section: Ophthalmology

Original Research Article

RETINAL PATHOLOGIES IN PATIENTS ATTENDING A TERTIARY EYE CARE CENTRE: AN OBSERVATIONAL STUDY

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ABSTRACT

Background: The aim is to determine the spectrum of Retinal disorders among patients attending a tertiary eye care centre in Nandyal, Andhra Pradesh.

Materials and Methods: This hospital-based observational study was conducted from January to June 2025 in the Department of Ophthalmology, Santhiram Medical College and General Hospital, Nandyal. One hundred patients diagnosed with Retinal pathologies were included. Each participant underwent a comprehensive ophthalmic evaluation, including visual acuity assessment, slit-lamp biomicroscopy, fundus examination, and relevant investigations. Data were analyzed for age, sex, laterality, and frequency of retinal diseases.

Results: Of 100 patients (56 males, 44 females; mean age 61.5 ± 13.9 years), Diabetic Retinopathy was the most common disorder (36%), comprising 27% Non-Proliferative and 9% Proliferative cases. Age-Related Macular Degeneration (16%) and Hypertensive Retinopathy (12%) followed. Other conditions included Retinal Vein Occlusion (6%), Retinitis Pigmentosa (3%), Macular Hole (3%), and Myopic Fundus/Posterior Staphyloma (4%). A smaller subset (7%) of younger patients (<40 years) presented with congenital or hereditary diseases such as Persistent Hyperplastic Primary Vitreous, Stargardt's disease, Retinochoroidal Coloboma, and Morning Glory syndrome. Bilateral involvement occurred in 77% of cases.

Conclusion: Retinal disorders affect all age groups, with vascular and degenerative diseases predominating. The high rate of bilateral involvement and presence of hereditary conditions in younger patients underscore the importance of early detection, comprehensive evaluation, and timely management. These findings can guide targeted screening, preventive strategies, and optimized retinal care to reduce preventable vision loss.

Keywords: Retinal disorders, Visual morbidity, Ophthalmic screening, Early detection, Public health awareness, Diabetic Retinopathy, Age–related macular degeneration, Retinal vein occlusions.

INTRODUCTION

Retinal disorders are among the leading causes of visual impairment and irreversible blindness worldwide. They encompass a broad spectrum of conditions involving vascular, degenerative, hereditary, inflammatory, and congenital changes affecting the retinal structure and function. These diseases affect all age groups, with presentation and severity influenced by age and underlying risk factors. As many retinal conditions remain asymptomatic in their early stages, patients often present only after significant vision loss has occurred.[1-5]

The impact of retinal diseases extends far beyond visual disability, influencing daily functioning, emotional well-being, and socioeconomic productivity. Although advances in imaging—such as fundus photography, OCT, and fluorescein angiography—have improved diagnosis, early

detection remains essential to prevent irreversible vision loss.[6-10]

The distribution and frequency of retinal disorders differ widely among populations due to variations in genetic background, lifestyle, environment, and access to eye care. Assessing these patterns provides valuable insights into disease trends and helps in developing effective screening, preventive, and treatment strategies.[11-14]

The present study was undertaken to analyze the spectrum and relative frequency of retinal pathologies, to evaluate their age and sex distribution, and to determine the laterality of involvement in patients presenting to a tertiary eye care centre. This analysis aims to contribute to the understanding of current retinal disease patterns and to emphasize the importance of early diagnosis and appropriate management to reduce preventable visual morbidity.[15-18]

MATERIALS AND METHODS

This hospital-based observational study was conducted in the Department of Ophthalmology, Santhiram Medical College and General Hospital, Nandyal, over a six-month period from January to June 2025, with a sample size of 100 patients selected using convenient sampling. Patients diagnosed with retinal pathology who provided informed consent were included, while those with incomplete clinical examination records or unwilling to participate were excluded.

All patients underwent a comprehensive ophthalmic evaluation, including visual acuity testing (unaided and best-corrected) using Snellen's chart, anterior segment assessment with slit-lamp biomicroscopy, and fundus examination using distant direct ophthalmoscopy, slit-lamp biomicroscopy with a +90D lens for posterior pole evaluation, and indirect ophthalmoscopy with a 20D lens for mid-peripheral and peripheral retinal assessment when indicated. Fundus photography was performed in relevant cases for documentation, and Optical Coherence Tomography (OCT) as well as Fundus Fluorescein Angiography (FFA) were performed when required to confirm the diagnosis and assess macular or vascular involvement.

RESULTS

A total of 100 patients diagnosed with various retinal pathologies were included in this study. The mean age of the study participants was 61.5 ± 13.9 years, with the majority (62%) aged between 50 and 70 years, and only 7% below 40 years. The age and sex distribution is summarized in Table 1. Overall, 56% of patients were male (n = 56) and 44% were female (n = 44), yielding a male-to-female ratio of 1.27:1. The proportion of male and female patients was comparable across most age groups, with a slight male predominance in the 50–70 year range. Laterality analysis showed that bilateral retinal involvement was present in 77% of patients, whereas 23% had unilateral disease [Figure 1].

Table 1: Age – sex distribution of study participants

Age group (years)	Male (n)	Female (n)	Total (n)
<40	4	3	7
40 – 50	5	3	8
50 – 60	17	13	30
60 – 70	18	14	32
>70	12	11	23
Total	56	44	100

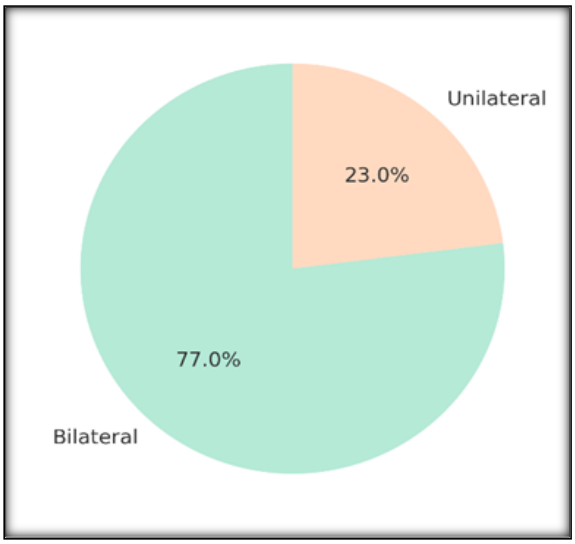

Figure 1: Laterality of retinal involvement

The distribution of retinal disorders in the study population is summarized in Table 2 and Figure 2. The most common retinal pathology observed was Diabetic Retinopathy (36%), which included 27 cases of Non-Proliferative Diabetic Retinopathy (NPDR) and 9 cases of Proliferative Diabetic Retinopathy (PDR). Age- related macular degeneration (16%) was the second most common pathology observed, followed by Hypertensive Retinopathy (12%) and Retinal Vein Occlusions (6%). Other pathologies included Pathological Myopia (4%), Retinitis Pigmentosa (3%), Macular Hole (3%), Retinochoroidal Coloboma (2%), Macular Edema (2%), Stargardt's disease (2%), Traumatic Vitreous Hemorrhage (2%), Epiretinal Membrane (2%), Retinal Detachment (2%), and several conditions at 1% prevalence.

Table 2: Distribution of various retinal disorders among patients attending our centre.

Variables	Number of patients
Non Proliferative Diabetic Retinopathy	27
Proliferative Diabetic Retinopathy	9
Hypertensive Retinopathy	12
Dry ARMD	10
CNVM / wet ARMD	6
BRVO	4
CRVO	2
BRAO	1
Retinochoroidal Coloboma	2
Retinitis pigmentosa	3
Central Serous Chorioretinopathy	1
Macular Hole	3
Persistent Hyperplastic Primary Vitreous	1
Papillitis	1
Stargardt's disease	2
ERM at macula	2
Rhegmatogenous Retinal Detachment	1
Tractional Retinal Detachment	1
Macular Edema	2
Myopic fundus/Posterior Staphyloma	4
Optic Atrophy	1
Parafoveal Telangiectasia	1
Pigmented Paravenous Chorioretinal Atrophy	1
Morning Glory Syndrome	1
Traumatic Vitreous Hemorrhage	2

Abbreviations: ARMD – Age-related macular degeneration, CNVM – Choroidal neovascular membrane, BRVO – Branch retinal vein occlusion, CRVO – central retinal vein occlusion, BRAO – Branch retinal artery occlusion, ERM – epiretinal membrane.

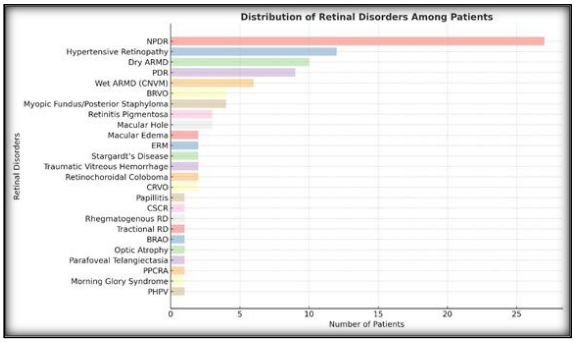

Figure 2: Distribution of retinal disorders among patients. This horizontal bar chart illustrates the frequency of various retinal pathologies observed among 100 patients in the study.

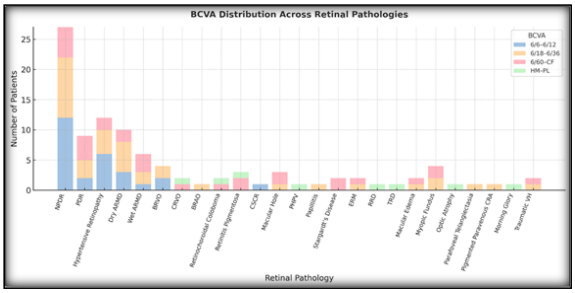

Figure 3: Best Corrected Visual Acuity (BCVA) distribution across retinal pathologies. This stacked bar chart illustrates the range of visual acuity levels among different retinal disorders in the study population. Each bar represents the number of patients within four BCVA categories — 6/6–6/12 (mild or no visual impairment), 6/18–6/36 (moderate visual impairment), 6/60–Counting Fingers (severe visual impairment), and Hand Movements–Perception of Light (profound visual loss).

The distribution of best corrected visual acuity (BCVA) among patients with various retinal pathologies is depicted in Figure 3. Overall, 27% of patients had good visual acuity (6/6–6/12), 38% exhibited moderate impairment (6/18–6/36), 25% had severe impairment (6/60–counting fingers), and 10% experienced profound visual loss (hand movements–perception of light).

DISCUSSION

This study reveals a diverse spectrum of retinal disorders, with Diabetic Retinopathy (36%) and Age-Related Macular Degeneration (16%) being the most prevalent, primarily affecting middle-aged and elderly patients (mean age 61.5 years). Vascular conditions such as Hypertensive Retinopathy and Retinal Vein Occlusions, as well as degenerative and macular disorders including Macular Hole, Epiretinal Membrane, and Macular Edema, were also common, reflecting the impact of systemic disease, aging, and oxidative stress on retinal health. Myopic changes contributed further to retinal morbidity in a subset of patients.

In contrast, Patients under 40 years presented with congenital or hereditary retinal disorders—including Persistent Hyperplastic Primary Vitreous, Morning Glory Syndrome, Stargardt's disease, and Retinochoroidal Coloboma—underscoring the need for early recognition, genetic counseling, and individualized management in younger individuals.

Both eyes were affected in 77% of cases, underscoring careful evaluation, as vascular and hereditary retinal disorders may progress

symmetrically. These findings are consistent with previous studies in India, which similarly reported Diabetic Retinopathy as the most common disorder, followed by Age-Related Macular Degeneration, with vascular disorders also frequently observed.

Visual outcomes varied according to pathology. Mild-to-moderate impairment predominated in NPDR, Hypertensive Retinopathy, BRVO, and CSCR, whereas severe or profound vision loss was more frequent in PDR, Wet ARMD, Retinal Detachments, and hereditary retinal disorders. Management strategies were tailored accordingly, including systemic control, laser or anti-VEGF therapy, surgical or pharmacological interventions, and supportive care with low-vision aids and genetic counseling. Structured follow-up ensured timely detection of progression and intervention despite resource constraints.

Public Health Implementation: Reducing the burden of retinal disease requires a comprehensive, population-focused approach. Community-based screening for diabetes and hypertension, routine eye examinations, public education on lifestyle modification, and accessible institutional care can enable early detection and prevent avoidable vision loss. Teleophthalmology and mobile screening units can improve access in underserved areas, while genetic counseling and low-vision support remain essential for younger patients with inherited disorders.

Limitations: This study is limited by its hospital-based design and relatively small sample size, which may not fully reflect population prevalence. Long-term follow-up and correlation with systemic parameters were not included, which could have provided further insight into disease progression.

CONCLUSION

Retinal disorders remain a leading cause of visual morbidity across all ages, with vascular and degenerative conditions—especially Diabetic Retinopathy and Age-Related Macular Degeneration—dominating the spectrum. The high rate of bilateral involvement calls for meticulous eye examination, while congenital and hereditary conditions in younger patients highlight the critical need for early detection and genetic counseling. Integrating systemic disease management with ophthalmic care, expanding community screening, and enhancing access to diagnostics and treatment are crucial to reducing preventable vision loss. By defining the current landscape of retinal pathologies, this study lays the groundwork for targeted interventions that can preserve sight and transform quality of life.

REFERENCES

1. Onakpoya OH, Olateju SO, Ajayi IA. Retinal diseases in a tertiary hospital: the need for establishment of a vitreo-retinal care unit. J Natl Med Assoc. 2008;100(11):1286–1289.
2. Nwosu SN. Prevalence and pattern of retinal diseases at the Guinness Eye Hospital, Onitsha, Nigeria. Ophthalmic Epidemiol. 2000;7(1):41–48.
3. Oluleye TS, Ajaiyeoba AI. Retinal diseases in Ibadan. Eye (Lond). 2006;20(12):1461–1463.
4. Eze BI, Uche JN, Shiweobi JO. The burden and spectrum of vitreo-retinal diseases among ophthalmic patients in a resource-deficient tertiary eye care setting in South Eastern Nigeria. Middle East Afr J Ophthalmol. 2010;17(3):246–249.
5. Abiose A. Pattern of retinal diseases in Lagos. Ann Ophthalmol. 1979;11(8):1067–1072.
6. Yorston D. Retinal diseases and Vision 2020. Community Eye Health. 2003;16(46):19–20.
7. Abdulsalam S, Olatunji F, Olatunji O, et al. An overview of medical and vitreoretinal services in Nigeria. Niger J Ophthalmol. 2022;30(1):1–5.
8. Huda MM, Khaleque SA, Habib M, Hossain M, Rahman A. Pattern of retinal diseases in a tertiary eye hospital in Bangladesh. JAFMC Bangladesh. 2007;3(2):10–13.
9. Dandona L, Dandona R, Srinivas M, Giridhar P, McCarty CA, Rao GN. Population-based assessment of diabetic retinopathy in an urban population in southern India. Br J Ophthalmol. 1999;83(8):937–940.
10. Raman R, Rani PK, Reddi Rachepalle S, Gnanamoorthy P, Uthra S, Kumaramanickavel G, Sharma T. Prevalence of diabetic retinopathy in India: Sankara Nethralaya Diabetic Retinopathy Epidemiology and Molecular Genetic Study (SN-DREAMS Report 2). Ophthalmology. 2009;116(2):311–318.
11. Jonas JB, Nangia V, Khare A, Sinha A, Lambat S. Prevalence and associations of diabetic retinopathy in rural central India. Ophthalmology. 2013;120(3):536–541.
12. Khandekar R, Sudhir J, Hussaindeen JR, et al. Epidemiology of retinal disorders in India: Review of available data and recommendations for future studies. Indian J Ophthalmol. 2021;69(11):2970–2979.
13. Lingam V, Sen A. Pattern of retinal diseases in a tertiary eye care hospital in South India. Int J Health Sci Res. 2015;5(6):105–109.
14. Ratra D, Dhupper M. Retinal detachment in India: The underlying etiology and outcomes. Indian J Ophthalmol. 2012;60(5):333–338.
15. Biswas J, Gopal L, Madhavan HN, Badrinath SS. Clinical profile and visual outcome of posterior uveitis in a tertiary care eye center in India. Indian J Ophthalmol. 1999;47(3):145–151.
16. Tiwari S, Kamble V, Shetty R, et al. Spectrum of retinal disorders in a tertiary eye care centre in Western India. J Clin Diagn Res. 2019;13(3):NC05–NC09.
17. Gupta V, Gupta A, Dogra MR. Spectrum of retinal diseases in a tertiary eye hospital in North India. Indian J Ophthalmol. 2004;52(2):93–98.
18. Rani PK, Raman R, Agarwal S, Paul PG, Sharma T. Diabetic retinopathy screening model for rural population: awareness and screening through primary health care system. Indian J Ophthalmol. 2005;53(3):195–200.