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Original Article

A retrospective study analysis of the pattern of retinal diseases in Seiyun, Yemen

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Abstract

Retinal diseases constitute an important and growing cause of visual impairment in Yemen, although nationwide epidemiological data remain limited. Hospital-based studies have shown that diabetic retinopathy (DR) affects approximately half of patients aged 50 years and above, while retinal detachment (RD) and macular degeneration (AMD) affect a quarter of the patients. This highlights the substantial burden of sight-threatening retinal disease in the country and the need for early detection and national-level retinal screening programs.

This retrospective study aimed to estimate the burden and gender-wise distribution of retinal diseases among patients attending the retina eye outpatient department at Roaya Eye Hospital and Retina Institute in Seiyun, Yemen, between July 2024 and December 2024. Data from 850 patients, including demographic information, final diagnoses of retinal conditions, and treatment types, were extracted from the hospital's Health Information System (HIS) database. SPSS v26.0 to determine frequencies and percentages.

The results showed that out of 850 participants, 28.7% were diagnosed with retinal diseases. Retinal diseases were more common in males (19.3%) than in females (9.4%). The most common retinal diseases were PDR (Proliferative Diabetic Retinopathy) (6.8%), RD (Retinal Detachment) (4.2%), and VH (Vitreous Hemorrhage) (4.0%), respectively, while NPDR (Non-Proliferative Diabetic Retinopathy) accounted for 2.7% of the cases. Other conditions like AMD (Age-related Macular Degeneration) (0.6%) and RP (Retinitis Pigmentosa) (0.5%) showed lower frequencies. Management strategies included glasses, laser therapy, intravitreal injection (e.g., anti-VEGF), and vitreoretinal surgery.

Retinal diseases constitute a substantial health burden in Seiyun, Yemen, primarily driven by Diabetic retinopathy, Retinal detachment, and Vitreous hemorrhage. These findings emphasize the urgent need for enhanced public health awareness, specialized ophthalmological training, and improved access to effective treatment modalities to mitigate vision loss in the region.

Keywords: Retinal Diseases, Diabetic Retinopathy, Retinal Detachment, Vitreous Hemorrhage, Public Health, Seiyun, Yemen

1. Introduction

The retina, a complex layer of neurons located in the posterior part of the eye, is essential for vision, converting light into signals that travel to the brain [1, 2]. Retinal diseases, which include a variety of vascular, degenerative, and tractional conditions, can lead to impairment and blindness [3]. Globally, these diseases represent a significant and growing health burden.

It is estimated that the number of individuals affected by Age-related Macular Degeneration (AMD) will reach 288 million by 2040 [4]. Diabetic Retinopathy (DR) is one of the most common microvascular complications of diabetes and is a leading cause of vision loss [5, 6]. With the global population of diabetes patients projected to reach 592 million by 2030, a substantial rise in DR incidence is expected [7]. The disease causes subtle changes in the retinal blood vessels and is classified into two main stages: non-proliferative (NPDR) and advanced proliferative (PDR) [8, 9]. Diabetic Macular Edema (DME) can occur at

any stage and poses a direct threat to visual acuity [6]. AMD is the leading cause of severe vision loss in individuals over 55 in developed countries, accounting for 6-9% of legal blindness cases worldwide [4]. The disease is characterized by the presence of fatty protein deposits called "drusen" beneath the retina in its early stages [10]. In addition, Retinal Detachment (RD), particularly the rhegmatogenous type caused by retinal tears, is the most common ophthalmic emergency and can result in significant and irreversible vision loss [11–13]. Retinitis Pigmentosa (RP), on the other hand, is a group of rare genetic disorders that lead to the progressive degeneration of photoreceptor cells, causing gradual vision loss [14]. This condition is a major cause of visual impairment globally, with an estimated prevalence of 1 in 4000 people [15].

Regionally, a recent study in Gulf Cooperation Council countries highlights that retinopathy is a significant health issue [16]. In Sub-Saharan Africa, RD accounts for 15.4% of diagnoses [17]. In Yemen, a study in Sana'a revealed that 53% of diabetic patients suffer from DR, with NPDR and PDR having a prevalence of 31.1% and 22%, respectively [18]. A study in Taiz found that AMD accounts for 14.3% of bilateral blindness cases in individuals aged 50 and older [19].

Hospital-based studies from Sana'a have shown that approximately 55% of patients with diabetes had diabetic retinopathy, while 22% had diabetic macular edema, highlighting a substantial burden of retinal complications among diabetic individuals. Furthermore, proliferative diabetic retinopathy and diabetic maculopathy are among the leading causes of visual impairment and blindness in Yemen, emphasizing the need for nationwide retinal screening and early intervention programs. [18, 20]. However, comprehensive local data on the frequency and pattern of retinal diseases in the Hadhramaut region, specifically in Seiyun, remain scarce.

Given the lack of comprehensive local data on the prevalence and patterns of retinal diseases in Seiyun, Yemen, this study aims to contribute to ophthalmic epidemiology in the region. Therefore, the study focused on determining the frequency and estimating the gender-wise distribution of retinal diseases among patients attending the retina clinic at Roaya Eye Hospital in Seiyun.

2. Methods

2.1. Study Design and Setting

This retrospective study was conducted at Roaya Eye Hospital and Retina Institute in Seiyun, Yemen, from July 2024 to December 2024. Roaya Eye Hospital and Retina Institute is a tertiary-level eye care facility where optometrists and ophthalmologists of different specialties have clinics. The facility offers ophthalmic investigations such as OCT (Optical Coherence Tomography), FFA (Fluorescein Fundus Angiography), B-Scan (Ultrasound Brightness Scan), A-Scan (Axial Length Scan), Visual Field, and Corneal Topography. Furthermore, anterior and posterior segment surgeries, including refractive surgeries, pediatric and oculoplastic/ocular prosthetic services, are also available on a visiting basis by the visiting pediatric ophthalmologist and optometrist from Egypt.

2.2. Inclusion and Exclusion criteria

Patients of all ages with one or both eyes diagnosed with retinal disease who visited retina specialists in the facility were included. Only patients with complete electronic records were included in data collection and analysis. Exclusion criteria included any patients with missing diagnoses or follow-up visits.

2.3. Sample size

The study population consisted of 2424 patients who visited the Retina Outpatient Department during this period. Of the 2424 patients, 850 were selected for analysis based on the sample size determined using the Raosoft program (https://raosoftcalculator.com/). The sample size was calculated keeping an acceptable margin of error of 3%, a desired confidence level of 97%, and a response distribution of 50%.

A systematic random sampling technique was used to ensure representativeness of the study population. The sampling interval (k) was calculated by dividing the total population (2424) by the required sample size (850). The resulting number, 2.85, was rounded to 3. A random starting point was selected from the first three eligible patients, after which every third patient meeting the study eligibility criteria was included until the target sample size of 850 participants was reached. This approach ensured that patients were selected evenly throughout the sampling frame, reducing selection bias and improving the representativeness of the retinal disease population.

2.4. Participants and procedures

Roaya Eye Hospital and Retina Institute has a well-established patient Health Information System (HIS) at the outpatient department, as shown in Figure 1. All registered patients initially undergo autorefractometry and non-contact tonometry measurements by the ophthalmic technician, followed by a preliminary examination by the Optometrist, including visual

acuity and refractive assessments. Patients are then examined by the specialist Ophthalmologist, depending upon the condition observed during the optometric examination or based on the referral through the system.

Figure 1: *Patient protocol within the Roaya Eye Hospital system.*

2.5. Ethical approval

Formal approval to access and utilize the anonymized patient data was obtained from the Education and Research Unit at Roaya Eye Hospital and the Retina Institute. Given the retrospective nature of the study, data was collected from the Health Information System (HIS) database. Patient confidentiality and anonymity were strictly maintained throughout the data extraction and analysis process.

To ensure accuracy and efficiency of data collection from the HIS, three researchers were assigned to extract the information, which was then transcribed manually onto a pre-designed paper-based research Proforma. To minimize transcription errors, all extracted data were double-checked for accuracy. The collected variables included demographic information such as age and gender, the final diagnosis of retinal condition, and the type of treatment provided. Subsequently, this data was entered into a structured spreadsheet in Microsoft Excel for meticulous organization and preparation prior to statistical analysis. The diagnoses of retinal conditions, including DR, AMD, RD, and RP, were based on the final documented diagnosis by a specialist ophthalmologist in each patient's medical record.

For data analysis, the collected information was verified, coded, and entered into SPSS software version 26.0. Descriptive analysis was performed on the total sample of 850 patients. Data were summarized using frequencies and percentages for

variables such as age (categorized into three groups: 1-18 years, 19-39 years, and 40 years and above), gender, final diagnosis of retinal diseases, and types of treatment provided. The study did not exclude any age groups from analysis.

3. Results

A total of 850 participants were included in this study, comprising 433 males (50.9%) and 417 females (49.1%). The largest proportion of participants belonged to the ≥40 years age group (54.7%), followed by those aged 19–39 years (29.2%), while participants aged 1–18 years represented the smallest group (16.1%). The gender distribution showed a slightly higher proportion of males in the older age group, as shown in Table 1.

Table 1: Demographic characteristics of study participants by age and gender (N=850)

Age Groups	Male	Female	Total	Percentage
1 – 18 Years	60	77	137	16.1
19 – 39 Years	124	124	248	29.2
40 years and above	249	216	465	54.7
Total	**433**	**417**	**850**	**100**

Among the 244 patients (28.7%) diagnosed with retinal diseases, 164 (67.2%) were male, and 80 (32.8%) were female. Most retinal disease cases occurred in participants aged 40 years and above (72.5%), followed by those aged 19–39 years (20.9%), while only 16 (6.6%) cases were observed among individuals aged 1–18 years. These findings indicate that retinal diseases were substantially more common in the older population, as shown in Table 2.

Table 2: Age-wise distribution of patients with retinal disease (N=244)

Age Groups	Male	Female	Total	Percentage
1 – 18 Years	11	5	16	6.6
19 – 39 Years	38	13	51	20.9
40 and above	115	62	177	72.5
Total	**164**	**80**	**244**	**100**

Table 3 presents frequency and categories of retinal disease by gender. We found that vascular retinal diseases were the most prevalent category (15.4%), with proliferative diabetic retinopathy (6.8%) being the most common diagnosis, followed by vitreous hemorrhage (4.0%) and non-proliferative diabetic retinopathy (2.7%). Degenerative retinal diseases accounted for 46 cases (5.4%), with diabetic macular edema (1.6%) being the leading condition. Tractional retinal diseases were identified in 45 participants (5.3%), predominantly retinal detachment (4.2%). Retinal atrophy was observed in 17 participants (2.0%), while inflammatory retinal diseases (0.3%) and retinal tumors (0.2%) were relatively uncommon. Across nearly all disease categories, males were more frequently affected than females.

Table 3: Frequency and categories of retinal diseases by gender (N= 850)

Disease Category	Diagnosis	Male	Female	Total	Percentage
Vascular Retina Diseases	Proliferative Diabetic Retinopathy	40	18	58	6.8
	Vitreous haemorrhage	24	10	34	4
	Non-proliferative Diabetic Retinopathy	14	9	23	2.7
	Retinal Pigment Epithelial Change	7	0	7	0.8
	Branch retinal vein occlusion	5	0	5	0.6
	Central retinal vein occlusion	0	2	2	0.2
	Retinal haemorrhage	2	0	2	0.2
	Sub-total	**92**	**39**	**131**	**15.4**

Disease Category	Diagnosis	Male	Female	Total	Percentage
Degenerative Retinal Diseases	Diabetic macular edema	11	3	14	1.6
	Macular scar	6	5	11	1.3
	Tigroid	3	3	6	0.7
	Macular degeneration	4	1	5	0.6
	Retinitis pigmentosa	4	0	4	0.5
	High myopia	2	2	4	0.5
	Choroidal neovascularization	1	0	1	0.1
	Lattice degeneration	0	1	1	0.1
	Sub-total	**31**	**15**	**46**	**5.4**
Tractional Retinal Diseases	Retinal detachment	28	8	36	4.2
	Epiretinal membrane	4	2	6	0.7
	Vitreous detachment	0	1	1	0.1
	Traction	1	0	1	0.1
	Membrane on disc	0	1	1	0.1
	Sub-total	**33**	**12**	**45**	**5.3**
Retinal Atrophy	Optic Atrophy	6	11	17	2
	Sub-total	**6**	**11**	17	2
Inflammatory Retinal Diseases	Vitritis	1	1	2	0.2
	Pigment vitreous cell	0	1	1	0.1
	Sub-total	**1**	**2**	**3**	**0.3**
Retinal Tumours	Tumour	1	0	1	0.1
	Tumour in situ	0	1	1	0.1
	Sub-total	**1**	**1**	**2**	**0.2**
Total Patients with Retinal Diseases		**164**	**80**	**244**	**28.7**

Regarding clinical management, we found that prescription glasses alone were the most common intervention (54.9%) among the study participants, followed by no treatment or management for other ocular conditions (26.1%), as shown in Table 4. Among therapeutic interventions, surgery alone was performed in 43 participants (5.1%), while intravitreal injections were administered to 39 participants (4.6%). Combined treatment approaches, including laser with intravitreal injection (2.5%), glasses with intravitreal injection (1.9%), and other combinations involving surgery or laser, were less frequently utilized. Overall, conservative management predominated, whereas invasive procedures were reserved for a smaller proportion of patients requiring advanced retinal care.

Table 4: Management patterns and treatments among study participants (N= (850)

Management	Male	Female	Total	Percentage
Glasses	207	260	467	54.9
Glasses + Laser	1	1	2	0.2
Glasses + Surgery	5	4	9	1.1
Glasses + I/V Injection	11	5	16	0.9
I/V Injection	28	11	39	4.6
I/V Injection + Surgery	6	3	9	1.1
Laser	7	5	12	1.4
Laser + I/V Injection	17	4	21	2.5
Laser + I/V Injection + Surgery	2	2	4	0.5
Laser + Surgery	3	3	6	0.7
No Treatment/ Other Disease	113	109	222	26.1
Surgery	33	10	43	5.1
Total	**433**	**417**	**850**	**100**

4. Discussion

The findings of this study show that retinal diseases represent a significant health burden at Roaya Eye and Retina Hospital, affecting 28.7% of the participants. The prevalence was higher in males compared to females, a pattern consistent with a study

conducted in Ethiopia [21]. This disparity between males and females may be related to occupational/environmental exposure or socio-economic and cultural barriers limiting healthcare access in the region. [22]

Diabetic retinopathy, retinal detachment, and vitreous hemorrhage were the three most common diseases, which aligns with a study from Pakistan [23], but differs from another study in Southern Nigeria, where age-related macular degeneration was the predominant diagnosis [24]. This may be due to the age distribution of the study population, particularly the relatively lower proportion of participants aged above 40 years (54.7%), which may have contributed to these findings.

Upon analyzing diabetic retinopathy, we found that the rates of proliferative (6.8%) and non-proliferative (2.7%) diabetic retinopathy differed from those reported in previous Yemeni studies, which stated that about 55% of diabetic patients have diabetic retinopathy, with 10% exhibiting proliferative disease (PDR) and 22% presenting with diabetic macular edema [18, 20]. The rate of retinal detachment (4.2%) was similar to that reported in another Yemeni study, which identified retinal detachment as one of the most common vitreoretinal disorders requiring specialist management. This similarity likely reflects the referral pattern of tertiary retinal centers, where complex retinal disorders are more frequently encountered than in primary eye care settings [20]. Previous Yemeni studies have reported higher frequencies of AMD among elderly patients attending ophthalmic clinics, while RP has consistently been described as an infrequent inherited retinal disorder. The lower prevalence of AMD in the present study is likely attributable to the relatively younger age profile of our study population, as AMD predominantly affects individuals aged ≥60 years and its prevalence increases markedly with advancing age. [20, 22, 25].

Beyond the prevalence of specific diseases, a detailed examination of management patterns (Table 3) provides crucial insights into the level of specialized care required by patients at Roaya Eye Hospital. The overall management profile of patients attending the hospital was dominated by spectacle prescription (51.6%), reflecting the substantial number of patients presenting with refractive errors or requiring optical rehabilitation in addition to those with retinal disorders. The high rate of spectacle prescriptions in our cohort is comparable to findings from a study in Taiwan, where spectacle prescription represented the most frequently prescribed ophthalmic intervention, accounting for many outpatient visits because refractive error constituted the predominant diagnosis among patients attending eye clinics [26]. In contrast, studies from the United States have reported substantially lower proportions of spectacle prescriptions within tertiary ophthalmology and retina clinics, where management is more frequently directed toward medical therapies, intravitreal anti-vascular endothelial growth factor (anti-VEGF) injections, laser photocoagulation, and vitreoretinal surgery because patients are referred with more advanced retinal pathology rather than uncomplicated refractive errors [27].

The utilization of advanced interventions strongly correlates with the leading pathologies (DR, RD, VH) identified in the results. The use of laser therapy for 1.8% of eyes and intravitreal injections for 3.3% alone (and substantially more in combination therapy) highlights the significant burden of PDR and DME. Similar findings have been reported in a tertiary eye hospital in China, where diabetic retinopathy constituted a substantial proportion of retinal cases and laser photocoagulation together with intravitreal anti-VEGF injections were among the most frequently performed retinal procedures, reflecting the high demand for specialized retinal care in referral centers [28].

The rate of laser photocoagulation observed in the present study was lower than that reported in Saudi Arabia [29], where laser therapy constituted one of the most frequently performed retinal procedures because a large proportion of patients presented with PDR and DME requiring laser treatment. This difference may reflect evolving treatment strategies, as anti-VEGF therapy has increasingly replaced laser photocoagulation as the first-line treatment for many retinal vascular diseases, particularly center-involving DME, while laser is now often reserved for selected indications or used as an adjunctive therapy. Conversely, the frequency of intravitreal injections is higher in Oman [30], where retinal diseases, particularly DR and retinal vein occlusion, accounted for a substantial proportion of ophthalmic services, resulting in a higher demand for repeated anti-VEGF injections. Differences between studies may be explained by variations in disease spectrum, referral patterns, treatment protocols, healthcare infrastructure, patient affordability, and access to anti-VEGF medications. The need for vitreoretinal surgery in our cohort, with 2.8% of patients undergoing surgery as standalone treatment, primarily reflected the management of complex sight-threatening conditions such as retinal detachment and vitreous hemorrhage. This proportion is broadly comparable to findings from Southern Nigeria, where approximately 7.7% of patients attending a vitreoretinal service required surgical intervention because of advanced retinal disorders [24]. Similarly, another large Nigerian study [31] reported that vitreoretinal surgery constituted an essential component of retinal care, with retinal detachment, vitreous hemorrhage, and advanced diabetic eye disease representing the leading surgical indications. Collectively, these findings highlight the indispensable role of specialized vitreoretinal services in preserving vision and demonstrate that tertiary retinal centers, including Roaya Eye Hospital, must maintain comprehensive medical and surgical capabilities to effectively manage advanced retinal diseases.

5. Limitations and future perspectives

This study has several limitations that should be acknowledged. First, its retrospective design relied on routinely collected hospital records, making the findings dependent on the accuracy and completeness of the available clinical documentation. Second, as the study was conducted at a single tertiary eye care center, the patient population may have included a higher proportion of complex and advanced retinal diseases due to referral bias, limiting the generalizability of the findings to the

broader Yemeni population. Third, the study did not include longitudinal follow-up data; therefore, disease progression, treatment outcomes, and long-term visual prognosis could not be evaluated. Finally, information on certain systemic risk factors and socioeconomic determinants that may influence the occurrence and management of retinal diseases was not consistently available in the medical records. Despite these limitations, the study provides valuable real-world evidence on the spectrum of retinal diseases and their management in one of the largest specialized retinal centers in eastern Yemen, offering important baseline data for future multicenter and prospective studies.

Public health initiatives should prioritize raising awareness about the importance of early detection and management, particularly for at-risk populations. Furthermore, enhancing the capabilities of local healthcare professionals through specialized training and ensuring access to essential treatment such as laser therapy, intravitreal injections, and vitreoretinal surgery are crucial steps. These measures are vital for effective prevention and management strategies aimed at preserving vision within the community.

6. Conclusion

Our study revealed retinal diseases as a significant health burden in Seiyun, Yemen. The study findings underscore the urgent need for improved access to effective treatments, the implementation of systematic screening programs, the continuous availability of specialized vitreoretinal services, and strengthened patient education in Seiyun, Yemen.

7. Declarations

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Author Contributions

Conceptualization, MQ, OB, AB, SM, AF; Methodology, MQ, OB, SM; Software, OB, AB, SM; Validation, OB, AB, SM; Formal Analysis, OB, AB, SM; Investigation, OB, AB, SM; Resources, MQ, OB, AB, SM, AF; Data curation, OB, AB, SM; Writing original draft, OB, AB, SM; Writing—review and editing, MQ, OB, AB, SM; Visualization, OB, AB, SM; Supervision, MQ, AF; Project administration, MQ, AF; Funding acquisition, None. All authors have read and approved the final manuscript.

Ethics Approval and Consent to Participate

Ethical considerations aligned with the Declaration of Helsinki were adhered to in this study. Approval for the study was obtained from Roaya Eye Hospital and Retina Institute 2025/Roaya/DOVS/004.

Data Availability Statement

The datasets used and/or analyzed during this study are available upon reasonable request from the corresponding author

Conflicts of Interest

None

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Use of Artificial Intelligence

The authors confirm that the flow chart diagram (Figure 1) was generated using the Artificial Intelligence (AI – ChatGPT 4.0) tool, and the authors take full responsibility for the accuracy and integrity of the work.

8. Abbreviations

The following abbreviations are used in this manuscript:

DR	Diabetic Retinopathy
PDR	Proliferative diabetic retinopathy
NPDR	Non-Proliferative diabetic retinopathy
RD	Retinal Detachment
VH	Vitreous Hemorrhage
AMD	Age-Related Macular Degeneration
RP	Retinitis Pigmentosa
I/V	Intra-vitreal Injection
HIS	Health Information System

References

[1] Willoughby, C. E.; Ponzin, D.; Ferrari, S.; Lobo, A.; Landau, K.; Omidi, Y. Anatomy and physiology of the human eye: effects of mucopolysaccharidoses disease on structure and function–a review. *Clin & Exp Ophthalmo.* **2010**, 38, 2–11. [CrossRef]

[2] Ptito, M.; Bleau, M.; Bouskila, J. The Retina: A Window into the Brain. *Cells* **2021**, 10(12), 3269. [CrossRef]

[3] Gupta, M. P.; Herzlich, A. A.; Sauer, T.; Chan, C. C. Retinal Anatomy and Pathology. *Dev Ophthalmol* **201**, 55, 7–17. [CrossRef]

[4] Guymer, R. H.; Campbell, T. G. Age-related macular degeneration. *Lancet* **2023**, 401(10386), 1459–1472. [CrossRef]

[5] Fung, T. H.; Patel, B.; Wilmot, E. G.; Amoaku, W. M. Diabetic retinopathy for the non-ophthalmologist. *Clin Med (Lond)* **2022**, 22(2), 112–116. [CrossRef]

[6] Wang, W.; Lo, A. C. Y. Diabetic Retinopathy: Pathophysiology and Treatments. *Int J Mol Sci* **2018**, 19(6), 1816. [CrossRef]

[7] Mohamed, Q.; Gillies, M. C.; Wong, T. Y. Management of diabetic retinopathy: a systematic review. *JAMA* **2007**, 298(8), 902–16. [CrossRef]

[8] Liu, Y.; Wu, N. Progress of Nanotechnology in Diabetic Retinopathy Treatment. *Int J Nanomedicine* **2021**, 16, 1391–1403. [CrossRef]

[9] Duh, E. J.; Sun, J. K.; Stitt, A. W. Diabetic retinopathy: current understanding, mechanisms, and treatment strategies. *JCI Insight* **2017**, 2(14), e93751. [CrossRef]

[10] DeAngelis, M. M.; Owen, L. A.; Morrison, M. A.; Morgan, D. J.; Li, M.; Shakoor, A.; et al. Genetics of age-related macular degeneration (AMD). *Hum Mol Genet* **2017**, 26(R1), R45–R50. [CrossRef]

[11] Ibrar, A.; Panayiotis, M.; Mohamed, E. A. Recognizing and managing retinal detachments. *Br J Hosp Med (Lond)* **2021**, 82(10), 1–11. [CrossRef]

[12] Gariano, R. F.; Kim, C. H. Evaluation and management of suspected retinal detachment. *Am Fam Physician* **2004**, 69(7), 1691–8. [PubMed]

[13] Sultan, Z. N.; Agorogiannis, E. I.; Iannetta, D.; Steel, D.; Sandinha, T. Rhegmatogenous retinal detachment: a review of current practice in diagnosis and management. *BMJ Open Ophthalmol* **2020**, 5(1), e000474. [CrossRef]

[14] Vingolo, E. M.; Mascolo, S.; Miccichè, F.; Manco, G. Retinitis Pigmentosa: From Pathomolecular Mechanisms to Therapeutic Strategies. *Medicina (Kaunas)* **2024**, 60(1), 189. [CrossRef]

[15] Salmaninejad, A.; Motaee, J.; Farjami, M.; Alimardani, M.; Esmaeilie, A.; Pasdar, A. Next-generation sequencing and its application in diagnosis of retinitis pigmentosa. *Ophthalmic Genet* **2019**, 40(5), 393–402. [CrossRef]

[16] Mohamed, Z.; Al-Natour, M.; Al Rahbi, H. Prevalence of Diabetic Retinopathy Among Individuals with Diabetes in Gulf Cooperation Council countries: A Systematic Review and Meta-analysis. *Oman Med J* **2024**, 39(1), e585. [CrossRef]

[17] Nkanga, D.; Adenuga, O.; Okonkwo, O.; Ovienria, W.; Ibanga, A.; Agweye, C.; et al. Collaborative Retina Research Network. Profile, Visual Presentation and Burden of Retinal Diseases Seen in Ophthalmic Clinics in Sub-Saharan Africa. *Clin Ophthalmol* **2020**, 14, 679–687. [CrossRef]

[18] Al-Akily, S. A.; Bamashmus, M. A.; Gunaid, A. A. Causes of visual impairment and blindness among Yemenis with diabetes: a hospital-based study. *East Mediterr Health J* **2011**, 17(11), 831–7. [CrossRef]

[19] A Al-Akily, S. A.; Bamashmus, M. A.; Al-Mohammadi, K. A. Causes of blindness in people aged 50 years and over: community-based versus hospital-based study. *East Mediterr Health J* **2010**, 16(9), 942–6. [PubMed]

[20] Bamashmus, M. A.; Gunaid, A. A.; Khandekar, R. B. Diabetic retinopathy, visual impairment and ocular status among patients with diabetes mellitus in Yemen: a hospital-based study. *Indian J Ophthalmol* **2009**, 57(4), 293–8. [CrossRef]

[21] Abebe, D.; Tsegaw, A. Pattern of vitreo-retinal diseases at University of Gondar tertiary eye care and training center, North-West Ethiopia. *PLoS One* **2022**, 17(4), e0267425. [CrossRef]

[22] Courtright, P.; Lewallen, S. Why are we addressing gender issues in vision loss? *Community Eye Health* **2009**, 22(70), 17–9. [PubMed]

[23] Naz, U.; Naz, S.; Rizvi, F.; Kamil, Z. Pattern of Uveitis in a Tertiary Care Eye Hospital Setting in Pakistan: A Comprehensive Analysis. *Ocul Immunol Inflamm* **2025**, 33(7), 1108–1112. [CrossRef]

[24] Uhumwangho, O. M.; Itina, E. I. Retinal diseases in a tertiary hospital in southern Nigeria. *J West Afr Coll Surg* **2015**, 5(2), 1–16. [PubMed]

[25] GBD 2021 Stroke Risk Factor Collaborators. Global, regional, and national burden of stroke and its risk factors, 1990–2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet Neurol* **2024**, 23(10), 973–1003. [CrossRef]

[26] Cheng, C. Y.; Sheu, M. M.; Chen, P. S.; Chuang, Y. T.; Cheng, H. M.; Hsieh, H. P. Assessing low vision care and the utilisation of optical low vision aids among patients with visual impairment in Taiwan. *Ophthalmic Physiol Opt* **2023**, 43(6), 1356–1363. [CrossRef]

[27] Sunness, J. S.; El Annan, J. Improvement of visual acuity by refraction in a low-vision population. *Ophthalmology* **2010**, 117(7), 1442–6. [CrossRef]

[28] Huang, Y.; Zheng, W. W.; Li, Y. Z.; Sun, Z. H.; Lin, B. Retinal laser photocoagulation and intravitreal injection of anti-VEGF for hemorrhagic retinal arterial microaneurysm. *Int J Ophthalmol* **2023**, 16(12), 2041–2048. [CrossRef]

[29] Al-Qahtani, A. A.; Almasaud, J. M.; Ghazi, N. G. Clinical characteristics and treatment outcomes of coats disease in a saudi arabian population. *Retina* **2015**, 35(10), 2091–9. [CrossRef]

[30] Al-Hinai, A. S. Experience of intravitreal injections in a tertiary Hospital in Oman. *Oman J Ophthalmol* **2015**, 8(3), 166–70. [CrossRef]

[31] Okonkwo, O. N.; Adenuga, O. O.; Nkanga, D.; Oyekunle, I.; Ovienria, W.; Agweye, C. T.; et al. Collaborative Retina Research Network Report 5. Retinal detachment in Nigerians: a multicentre cross-sectional study on demographics, risk factors for blindness and surgical outcomes in a developing country. *BMJ Open* **2025**, 15(9), e098073. [CrossRef]