Original Research Article

Journal of College of Medical Sciences-Nepal, Vol-22, No.1, Jan-Mar 2026

ISSN: 2091-0657 (Print); 2091-0673 (Online) Open Access
DOI: 10.3126/jcmsn.v22i1.87135

Clinico-Epidemiologic Profile of Uveitis and Scleritis at a Tertiary Eye Center in Central Nepal

Kumudini Subedi[1], **Meena- Kunwar**[2]

[1]Department of Uveitis and Vitreoretina , Bharatpur Eye Hospital, Bharatpur, Chitwan, Nepal, [2]Department of Ophthalmology, Nepal Armed Police Force Hospital, Balambu, Kathmandu, Nepal.

ABSTRACT

Background

The advent of newer diagnostic modalities, trained manpower and a change in population dynamics as well as socio-demographic profile leads to increased diagnosis of uveitis. Patterns of uveitis in the same region may differ in due course of time which must be noted for early diagnosis and treatment protocols to be established. This study aimed to analyze the profile of uveitis at a tertiary centre in Bharatpur, Nepal.

Methods

Consecutive cases of uveitis and scleritis attending a tertiary eye center in central Nepal through January 2024 to June 2024 examined by a single uveitis specialist were included in the study. With the exception of cases with isolated unilateral non-granulomatous anterior uveitis, all patients were advised standard battery of uveitis investigations.

Results

Study included 242 eyes of 200 patients among them 42 cases had bilateral (21%) Uveitis and Scleritis. Most cases had first episode of acute uveitis 108 (54%) followed by acute, recurrent uveitis 68 (34%). The most common form of uveitis was anterior uveitis 101(41.73%) followed by panuveitis 41 (16.90%) and anterior with intermediate uveitis 32 (13.22%) and the most common diagnostic entity was idiopathic 54 (27%) followed by toxoplasmosis 25 (12.5%).

Conclusions

Meticulous examination of anterior and posterior segments of the eye should be done in all cases of uveitis and standard battery of tests should be advised to diagnose and treat uveitis entities. Infectious causes of uveitis should be investigated as a priority.

Keywords: Diagnosis; Granulomatous; Idiopathic; Infectious; Scleritis; Uveitis.

Correspondence: Dr. Kumudini Subedi, Department of Uveitis and Vitreoretina, Bharatpur Eye Hospital, Bharatpur, Chitwan, Nepal. **E-mail:** subedikumu@gmail.com, **Phone:** +977-9845100057. **Article received**: 2025-10-01. **Article accepted**: 2026-01-23. **Article published**: 2026-03-31.

INTRODUCTION

Uveitis is a complex ocular condition often serving as a 'window' to systemic diseases. It accounts for 5-10% of global blindness, making early recognition of local epidemiological patterns essential for clinical management.[1-8] The aetiological spectrum of uveitis exhibits significant geographic variation whereby western populations have predominantly non-infectious, immune-mediated aetiologies like HLA-B27-associated uveitis and sarcoidosis[9] and Asia and Africa have higher rates of infectious etiologies, including tuberculosis and toxoplasmosis.[10] Studies in India and Nepal highlight a dominance of idiopathic and infectious cases, particularly tuberculosis.[11-14] Despite its impact, many regions lack contemporary, institution-based data. Furthermore, uveitis remains a 'dreaded topic' for many general ophthalmologists due to its clinical complexity. This study aimed to analyze the profile of uveitis at a tertiary centre in Bharatpur, Nepal.

METHODS

This cross-sectional, study was conducted in the department of retina services at Bharatpur Eye Hospital, a tertiary care referral center, from January 2024 to June 2024. A total of 200 consecutive patients diagnosed with uveitis by single uveitis specialist were included. Proforma was made on the basis of previous studies done in Nepal.[13] Ethical approval was obtained from Institutional review committee (IRC) of Bharatpur Hospital (Ref. No-079/80-023), and the study adhered to the tenets of the Declaration of Helsinki. Inclusion criteria consisted of all new patients presenting to the department with features of uveitis, diagnosed by a single uveitis specialist based on clinical features as per the SUN criteria.[8] Operational definition of anterior uveitis included presence of cells in the anterior chamber, posterior chamber or anterior vitreous face as seen by an oblique slit lamp beam of 1x1 mm, with/ without Keratic precipitates (KPs) in the corneal endothelium with/without iris nodules and fibrin in the anterior chamber. Similarly, intermediate uveitis was diagnosed after pupillary dilatation as having vitreous snow balls or snow banking or pars planitis with/ without anterior chamber reaction/spill over. Posterior uveitis included focal or multifocal retinitis, choroiditis, chorioretinitis, retinochoroiditis or retinal vasculitis in the form of phlebitis or arteritis or both. In addition, scleritis was diagnosed when there was scleral inflammation, either focal or diffuse with violaceous hue that did not blanch by topical phenylephrine 2.5%. Scleritis may be associated with stromal keratitis when it was termed sclerokeratitis and when this was associated with uveitis, termed sclerokeratouveitis respectively.[8] Exclusion criteria included patients with masquerade syndromes, incomplete laboratory investigation reports, or secondary uveitis due to trauma or postoperative inflammation Each patient underwent a comprehensive ophthalmic evaluation, including Snellen's visual acuity testing, slit-lamp bio microscopy of anterior segment with posterior segment evaluation with 78/90D lens, intraocular pressure measurement with Goldmann applanation tonometry, and fundus and anterior segment imaging where indicated. Anatomical classification was based on the Standardization of Uveitis Nomenclature (SUN) Working Group criteria.[8] Additional laboratory investigations such as complete blood counts, Erythrocyte Sedimentation rate (ESR), Venereal Disease Research Laboratory (VDRL- a non-specific treponemal test), Treponema Pallidum Hemaglutination Assay (TPHA- a specific treponemal test), (Rheumatoid arthritis (RA) factor, Anti-Nuclear Antibody (ANA) test, Angiotensin converting Enzyme (ACE), Mantoux test, chest imaging (digital X ray of the chest Postero-anterior view) and urine routine and microscopic examination was done in all cases except cases presenting with unilateral non granulomatous anterior uveitis.[8] Human Leukocyte Antigen (HLA-B27) typing was done in cases of recurrent non granulomatous anterior uveitis and serology for toxoplasma (Toxoplasma IgM and IgG), was performed as clinically indicated.[8,15,16] On the basis of clinical examination and laboratory investigations, etiological diagnoses were made. Criteria followed for confirming etiological

diagnoses were according to revised SUN criteria 2021. These included Syphilis if treponemal tests were positive, ocular tuberculosis if Mantoux test was positive, sarcoidosis if Mantoux test was negative but ACE level were high, rheumatoid arthritis or JIA (Juvenile Idiopathic Arthritis) if RA (Rheumatoid arthritis) factor was positive.[17-19] Diagnoses of infective aetiology were done according to lab tests and clinical features, in particular, pertaining to Herpes viral spectrum, toxoplasma chorioretinitis or panuveitis, and tuberculosis.[16,18,21] If the patient had all standard laboratory tests negative, the diagnosis was termed idiopathic. Behcet's disease was diagnosed if physical features of the disease coincided with ocular features and fulfilled the revised SUN criteria 2021.[22] SLE associated uveitis was confirmed if ANA positivity was established along with dermatologists diagnosis of SLE. Similarly, scrub typhus associated uveitis and leprosy associated uveitis were diagnosed after referral from dermatologist and internal medicine practitioner. SHAPU was diagnosed if there was sudden onset of severe anterior to posterior inflammation of the eye with features suggestive, according to criteria laid by SHAPU research group (SRG).[23]

Collected data included demographics (age, gender), anatomical classification (anterior, intermediate, posterior, panuveitis), laterality, course (acute, chronic, recurrent), and final etiological diagnosis.

Statistical analysis was performed using Microsoft Excel. Descriptive statistics were employed to summarize the data; categorical clinical patterns (anatomical distribution, aetiology) were reported as absolute frequencies and percentages.[2]

RESULTS

A total of 242 eyes of 200 patients were included in the study 137 patients were from Chitwan district and others from Nawalpur, Gorkha, Tanahun, Dhading, Makwanpur, Lamjung, Baglung districts. In addition one patient from India was also included. Age distribution of patients was as shown in Table 1 with maximum 45 (22.5%) belonging to 50-60 years age group. Most patients belonged to Brahmin ethnicity 81 (40.5%) followed by Janajati ethnicity 69 (34.5%). Others were Chhetri 21 (10.5%) , Newar 16 (8%), and Dalit 13 (6.5%) ethnicity (Table 1).

Table 1. Demographic parameters of patients included (n=242).

Age (years)	Frequency (%)
Under 10	4 (2)
10-20	15 (7.5)
20-30	40 (20)
30-40	28 (14)
40-50	41 (16.90)
50-60	45 (22.5)
60-70	27 (13.5)
Sex	
Female	100 (50)
Male	100 (50)
Ethnicity	
Brahmin	81 (40.5)
Janajati	69 (34.5)
Chhetri	21 (10.5)
Newar	16 (8)
Dalit	13 (6.5)
District	
Chitwan	137 (68.5)
Nawalpur	29 (14.5)
Gorkha	10 (5)
Tanahun	8 (4)
Dhading	3 (1.5)
Makwanpur	3 (1.5)
Lamjung	2 (1)
Baglung	2 (1)
Bara	2 (1)
Rupandehi	1 (0.5)
Jhapa	1 (0.5)
Kailali	1 (0.5)

Out of 200 cases, 42 cases had bilateral (21%) Uveitis and Scleritis (Table 2).

Table 2. Anatomical classification with aetiology of uveitis (n=242).

Eye (Unilateral vs. bilateral)	Frequency (%)
Bilateral	42 (21)
Unilateral	158 (79)

Isolated anterior uveitis was the most common form of uveitis and comprised of 101 eyes (41.73%), intermediate uveitis 6 eyes (2.47%), anterior with intermediate uveitis 32 eyes (13.22%), posterior uveitis 29 eyes (11.99%) and panuveitis 41 eyes

(16.90%) Scleral involvement was seen in 25 eyes (10.33%) cases with 12 eyes each affected by sclerouveitis, isolated scleritis (4.95%), and 1 eye affected by sclerokeratouveitis (0.41%) . Among these 108 patients of total 200 had acute disease, 11 patients had chronic uveitis and 81 had recurrent disease, of which only 1 patient had chronic recurrent uveitis and all others had acute recurrent uveitis. A specific diagnosis was found in 84 patients of total 200 (42%) whereas 58% remained idiopathic according to the standard battery of tests advised.

Table 3. Aetiology and frequency of anatomical types of uveitis (n=242).

Anterior Uveitis	**Number of eyes (%)**
Idiopathic	62 (69.66)
HLA B27	15 (16.85)
Herpetic	3 (3.37)
Leprosy	1 (1.12)
RA	3 (3.37)
Sarcoidosis	3 (1.12)
Sympathetic	1 (1.12)
TB	1 (1.12)
Anterior + Intermediate Uveitis	
Causes	
Idiopathic	22 (75.86)
RA	1 (3.44)
Sarcoidosis	3 (10.34)
TB	2 (6.89)
Toxoplasma	1 (1.12)
Intermediate Uveitis	
Causes	
Idiopathic	4 (100)
Posterior Uveitis	
Causes	
Toxoplasma	13 (81.25)
Idiopathic	2 (12.5)
Post-viral	1 (6.25)
Retinal Vasculitis	
Causes	
Idiopathic	3 (75)
Eales	1 (25)
Panuveitis	
Causes	
Toxoplasma	9 (26.47)
Idiopathic	1 (2.94)
SHAPU	1 (2.94)
TB	1 (2.94)
VKH	5 (14.70)
Sympathetic	1 (294)
Behcets	3 (8.82)P
Sarcoidosis	11 (32.35)
Scrub Typhus	2 (5.88)
Keratouveitis	
Causes	
Idiopathic	6 (85.71)
TB	1 (14.28)
Scleritis	
Idiopathic	8 (72.72)
SLE	1 (9.09)
TB	2 (18.18)
Sclerokeratouveitis	
Idiopathic	1 (100)
Sclerouveitis	
Idiopathic	8 (66.67)
HLA-B27	1 (8.33)
Behcet's	1 (8.33)
TB	2 (16.67)

DISCUSSION

The epidemiological patterns of uveitis vary from region to region and time period to time period, in particular, dependent on geographical factors and socio-economic profile as also the availability of facilities for diagnosis. Understanding the epidemiological patterns of uveitis requires clinicians to look beyond ocular findings and consider the broad systemic, infectious, and autoimmune conditions that may underlie intraocular inflammation.[1,2,6-9,12] As emphasized by Nussenblatt, a careful medical history, full physical examination, and close observation of disease course remain central to accurate diagnosis and appropriate management of uveitis.[1,2,6-9,12]

In the present study, we analysed uveitis cases presenting to a tertiary eye care centre in Nepal with a newly established uveitis department. Majority of patients were from the age group 50-60 years-45 of 200 (22.5%). The distribution of anatomical types of uveitis in our cohort (41.73%) anterior, (2.47%) intermediate, (13.22%) anterior plus intermediate, (11.99%) posterior, and (16.90%) panuveitis is

broadly comparable to the epidemiological patterns reported across South and Southeast Asia.[5,9-14] Studies from Bangladesh, Northeast India, and other regional centres consistently highlight anterior uveitis as the most frequent anatomical subtype, ranging from (39%) to (72%) of cases, with intermediate and posterior uveitis contributing smaller but significant proportions.[1,2,4,5,8-14] Our findings align closely with this regional trend, suggesting similar anatomical patterns of presentation.

Comparing our findings with Western data underscores notable geographic differences. Studies from Europe and North America often identify autoimmune and idiopathic aetiologies particularly HLA-B27 and sarcoidosis as dominant causes.[1-14] Conversely, the higher prevalence of infectious uveitis in our region likely reflects endemicity, environmental conditions, and socioeconomic factors. The substantial number of idiopathic uveitis cases in our study is comparable to global findings, where (30-50%) of cases remain without a definitive cause despite extensive evaluation. Possible explanations include limited access to advanced diagnostic modalities, early presentation with incomplete findings, or the inherently complex nature of autoimmune inflammation. In our cohort, a specific aetiology could be established in 42.5% of cases. The predominance of particular aetiologies differed markedly from neighbouring countries. For example, *Rahman et al*., from Bangladesh reported ocular tuberculosis (10.7%), HLA-B27–related uveitis (10.1%), and VKH disease (8.4%) as their leading diagnoses, whereas studies from Northeast India demonstrated high rates of toxoplasmosis in posterior uveitis and a substantial proportion of idiopathic intermediate uveitis.[24,25] Similarly, large multicentre data from India highlight the prominence of leptospiral uveitis, tuberculous uveitis, and herpetic aetiologies, with marked age-related variation, especially in paediatric and elderly populations. The present findings are consistent with global analyses demonstrating significant regional variation in uveitis aetiologies while anatomical presentations tend to remain relatively stable. Even in the same region, the common diagnoses change.[1-14,24,25] Rathinam and colleagues, in their review of over 24 international case series, noted that infectious uveitis remains more prevalent in tropical regions, with idiopathic cases still constituting a large proportion despite advances in diagnostic modalities.[12] This study, although conducted at a site with newly established uveitis treatment facility, shows almost complete alignment with previous studies done in Nepal. In contrast, our study identified Toxoplasmosis (12.5%of total), Tuberculosis (5.5%) and herpetic uveitis (1.5%) as the most common infectious causes of uveitis and HLA B27 associated uveitis (8% of total) as the most common non-infectious causes. As (58.5%) uveitis cases were still idiopathic in this study, further evaluation and deeper rheumatologic, immunologic evaluation may help in defining a specific diagnosis and prognostic algorithm. A unique finding in this study is the occurrence of scleral inflammation in ocular Tuberculosis, where (36%) of patients with tuberculosis had scleral inflammation as either scleritis or sclero-uveitis. These findings reflect Nepal's unique geographic, infectious, and sociodemographic context. Differences in environmental exposures, prevalence of systemic diseases such as tuberculosis, genetic susceptibility factors such as HLA-B27, and variable access to diagnostic testing likely contribute to this heterogeneity in aetiology across South and Southeast Asia.

The variation in etiological diagnoses across the region highlights the need for clinicians in Nepal to maintain a broad differential diagnosis and incorporate both regional epidemiology and individual patient risk factors when evaluating uveitis. Strengthening access to diagnostic investigations particularly for tuberculosis, toxoplasmosis, HLA-B27 related disease, and sarcoidosis may further improve etiological yield and guide targeted management.

CONCLUSIONS

This study provides valuable insight into the epidemiological and clinical patterns of uveitis in a tertiary care setting in Bharatpur, Nepal, a city

beyond the capital with recently established uveitis department. It provides baseline data as to patterns of uveitis outside of the capital city and establishes the urgent need to build manpower in this field of specialization throughout the nation. The study showed anterior uveitis was the most common presentation, and infectious aetiologies, particularly tuberculosis featured prominently with atypical findings. These findings underscore the importance of establishing a national uveitis registry and thus region-specific diagnostic protocols which help in early disease recognition to prevent visual morbidity. Also, it stresses the need for establishing a national uveitis registry for outlining real world data in the region so that protocols may be developed and standards may be set.

Limitations

Advanced testing for complex rheumatologic diseases and PCR testing of ocular fluid samples were not available. This may have led to increased number of cases being labelled as Idiopathic. It is recommended that a national protocol for uveitis diagnosis be established through national uveitis registry.

Acknowledgements

All authors would like to acknowledge the efforts of researchers whose studies were included in this meta-analysis, as their valuable work provided the foundation for this review. Authors would like to acknowledge the department of uveitis and vitreo-retinal surgery, Bharatpur Eye Hospital for the coordination and support in data collection.

Conflict of interest: The Authors declare no conflict of interest

Funding: No funding was received from any agency to conduct this study.

Availability of data and materials: All data analysed during this study will be made available upon reasonable request from the corresponding author.

Authors contribution

Conceptualization: Kumudini Subedi, Meena Kunwar.

Data curation: Kumudini Subedi.

Formal analysis: Kumudini Subedi.

Investigation: Kumudini Subedi.

Methodology: Kumudini Subedi.

Supervision: Meena Kunwar.

Writing-original draft: Kumudini Subedi.

Writing-review & editing: Meena Kunwar.

REFERENCES

1. Whitcup SM, Sen H, Nussenblatt RB. Uveitis: fundamentals and clinical practice. (No Title). 2004. [Link]
2. Miserocchi E, Fogliato G, Modorati G, Bandello F. Review on the worldwide epidemiology of uveitis. European journal of ophthalmology. 2013 Sep;23(5):705-17. [DOI]
3. Hsu SM, Yang CH, Teng YT, Tsai HY, Lin CY, Lin CJ, Shieh CC, Chen SH. Suppression of the reactive oxygen response alleviates experimental autoimmune uveitis in mice. International journal of molecular sciences. 2020 May 5;21(9):3261. [DOI]
4. Rothova A, Suttorp-van Schulten MS, Treffers WF, Kijlstra A. Causes and frequency of blindness in patients with intraocular inflammatory disease. British Journal of Ophthalmology. 1996 Apr 1;80(4):332-6. [DOI]
5. Acharya NR, Tham VM, Esterberg E, Borkar DS, Parker JV, Vinoya AC, Uchida A. Incidence and prevalence of uveitis: results from the Pacific Ocular Inflammation Study. JAMA ophthalmology. 2013 Nov;131(11). [DOI]
6. Huang XF, Brown MA. Progress in the genetics of uveitis. Genes & Immunity. 2022 Apr;23(2):57-65. [DOI]
7. Rosenbaum, J. T., et al. (2015). Uveitis: The collaborative diagnostic evaluation. The New England Journal of Medicine, 373(7), 610-619. [DOI]
8. Standardization of Uveitis Nomenclature (SUN) Working Group. Standardization of uveitis nomenclature for reporting clinical data. Results of the First International Workshop. American journal of ophthalmology. 2005 Sep 1;140(3):509-16. [DOI]
9. Chang, J. H., & Wakefield, D. (2002). Uveitis: A global perspective. Ocular Immunology and Inflammation, 10(4), 263-279. [DOI]

10. Gupta, A., Bansal, R., Gupta, V., & Sharma, A. (2009). The patterns of uveitis in India. International Ophthalmology Clinics, 49(1), 1-13. [DOI]
11. Singh R, Gupta V, Gupta A. Pattern of uveitis in a referral eye clinic in north India. Indian J Ophthalmol. 2004 Jun;52(2):121-5. [DOI]
12. Rathinam S et al. Global variation and pattern changes in epidemiology of uveitis. Indian Journal of Ophthalmology 55(3):p 173-183, May-Jun 2007. [DOI]
13. Manandhar A. Patterns of Uveitis and Scleritis in Nepal: A Tertiary Referral Center Study. Ocul Immunol Inflamm. 2017;25(sup1):S54-S62. [DOI]
14. Kharel R, Khatri A, Gamal NS, Sharma AK, Shah DN. Patterns of uveitis among Nepalese population presenting at a tertiary referral eye care centre in Nepal. New Front Ophthalmol. 2019;5(3):2-10. [DOI]
15. HLA-B27 associated uveitis: Classification Criteria for Spondyloarthritis/HLA-B27-Associated Anterior Uveitis .Am J Ophthalmol 2021;228: 117-125. [DOI]
16. Jabs DA, Belfort Jr R, Bodaghi B, Graham E, Holland GN, Lightman SL, Oden N, Palestine AG, Smith JR, Thorne JE, Trusko BE. Classification criteria for toxoplasmic retinitis. American journal of ophthalmology. 2021 Aug 1;228:134-41. [DOI]
17. Jabs DA, Belfort Jr R, Bodaghi B, Graham E, Holland GN, Lightman SL, Oden N, Palestine AG, Smith JR, Thorne JE, Trusko BE. Classification criteria for syphilitic uveitis. American journal of ophthalmology. 2021 Aug 1;228:182-91. [DOI]
18. Jabs DA, Belfort Jr R, Bodaghi B, Graham E, Gupta V, Holland GN, Lightman SL, Oden N, Palestine AG, Smith JR, Thorne JE. Classification criteria for tubercular uveitis. American journal of ophthalmology. 2021 Aug 1;228:142-51. [DOI]
19. Jabs DA, Acharya NR, Denniston AK, Lightman SL, McCluskey P, Oden N, Okada AA, Palestine AG, Thorne JE, Trusko BE, Vitale A. Classification criteria for sarcoidosis-associated uveitis. American journal of ophthalmology. 2021 Aug 1;228:220-30. [DOI]
20. Jabs DA, Acharya NR, Chee SP, Goldstein D, McCluskey P, Murray PI, Oden N, Palestine AG, Rosenbaum JT, Thorne JE, Trusko BE. Classification criteria for juvenile idiopathic arthritis–associated chronic anterior uveitis. American journal of ophthalmology. 2021 Aug 1;228:192-7. [DOI]
21. Jabs DA, Acharya NR, Caspers L, Chee SP, Goldstein D, McCluskey P, Murray PI, Oden N, Palestine AG, Rosenbaum JT, Thorne JE. Classification criteria for herpes simplex virus anterior uveitis. American journal of ophthalmology. 2021 Aug 1;228:231-6. [DOI]
22. Jabs DA, Dick AD, Dunn JP, Kramer M, McCluskey P, Oden N, Okada AA, Palestine AG, Read RW, Thorne JE, Trusko BE. Classification criteria for Behçet disease uveitis. American journal of ophthalmology. 2021 Aug 1;228:80-8. [DOI]
23. Kharel Sitaula R, Khatri A, Karki P, Joshi SN, Gurung H, Shrestha E, Maharjan I, Sharma AK, Upadhyay MP. Classification of seasonal hyperacute panuveitis (SHAPU). Ocular Immunology and Inflammation. 2022 Nov 17;30(7-8):1751-5. [DOI]
24. Rahman, W., Alam, F., Haque, S. et al. (2017) 'Pattern of Uveitis in a Referral Hospital in Bangladesh', Journal of Clinical and Experimental Ophthalmology, 8, p.401. [PubMed]
25. Das D, Bhattacharjee H, Bhattacharyya PK, Jain L, Panicker MJ, Das K, Deka AC. Pattern of uveitis in North East India: a tertiary eye care center study. Indian Journal of Ophthalmology. 2009 Mar 1;57(2):144-6. [DOI]

Citation: Subedi K, Kunwar M. Clinico-Epidemiologic Profile of Uveitis and Scleritis at a Tertiary Eye Center in Central Nepal. JCMS Nepal. 2026; 22(1): 55-61.