

**A Retrospective Analysis of 120 Cases of Uveitis at a Tertiary Care Centre in Western Gujarat**Rashmita Gautam Kumar<sup>1</sup>, Kukadia Gautamkumar Maganlal<sup>2</sup><sup>1</sup>Assistant Professor, Department of Ophthalmology, ICARE Institute of Medical Sciences and Research, Dr. Bidhan Chandra Roy Hospital, Haldia, West Bengal, India<sup>2</sup>Assistant Professor, Department of Ophthalmology, ICARE Institute of Medical Sciences and Research and Dr. Bidhan Chandra Roy Hospital, Haldia, West Bengal, India

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Conflict of interest: Nil

**Abstract****Background:** Uveitis is a major cause of visual disability and avoidable blindness in the world especially in the poor nations like India. It has different clinical symptoms, viral and non-infectious causes. The demographic profile, the distribution and etiology of uveitis needs to be known to be diagnosed and treated early to avoid vision threatening effects.**Aim:** To examine the demographics, anatomical classification, etiological distribution, and complication of uveitis cases in a tertiary care centre in Western Gujarat.**Methodology:** Retrospective observational study of 120 uveitis patients per 1 year in a hospital. Medical record data on social demographics, clinical presentation, anatomical categorization, etiological diagnosis, laboratory and imaging data, and complications was collected using a standardized proforma. The SPSS 25.0 was used to analyze data. Inferential tests like the chi-square test and descriptive statistics were used to determine statistical significance.**Results:** The majority of patients were male (60.0%) and aged 21–40 (52.5%). Most uveitis cases (55.0%) were anterior, followed by posterior (20.0%), intermediate (15.0%), and pan (10.0%). The proportion of non-infectious cases was 95 %, infected cases were 40 % and the idiopathic cases were 15 %. After cataract (25.0%), posterior synechiae (16.7%), glaucoma (15.0%), and macular edema (11.7%), were the most prevalent complications. It was linked with the anatomical classification and etiology ( $p=0.032$ ) and age group and uveitis type ( $p=0.041$ ).**Conclusion:** Uveitis is predominantly a disease of the young, and can be caused by a variety of factors. Most people have anterior uveitis and the non-infectious causes are far more prevalent. Early diagnosis, classification, and treatment are needed to prevent problems and impairment of vision in the long term.**Keywords:** Uveitis, Anterior Uveitis, Posterior Uveitis, Ocular Inflammation, Etiology, Complications.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Uveitis is an inflammatory disease of the uveal tract of the eye, the primary cause of visual morbidity on a worldwide level and a major cause of avoidable blindness, particularly in the less developed world, like India [1]. Uveitis, traditionally viewed as a comparatively less prevalent ocular condition has been increasingly gaining attention in recent years because of its diverse clinical manifestations, complicated etiology, and possible irreversible loss of vision unless treated with proper attention [2]. The disease may affect various sections of the eye such as the iris, ciliary body and choroid and spread to other structures which are next to the eye, such as the retina and vitreous [3].

Clinical presentation of uveitis is very broad and may include acute and self-limiting disease, as well as chronic and recurrent disease that needs long-term treatment. It is anatomically widely divided into anterior, intermediate, anterior and panuveitis each having a different clinical presentation and prognostic value [4]. Etiological factors of uveitis are multifactorial, including infectious diseases (bacteria, viruses, parasites), and non-infectious diseases (autoimmune and systemic inflammatory diseases). Although there has been an improvement in the modalities of diagnosis, a significant number of cases remain to be idiopathic, which present difficulties in planning effective treatment [5].

Uveitis is usually seen in people during their working age and causes significant socioeconomic im-

pact as it causes visual loss and reduces the quality of life [6]. Diagnosis, proper classification and underlying etiology are important in order to manage and prevent complications. Thus, regional specific studies are needed to comprehend clinical and etiological trends of uveitis [7]. In this regard, the current research was done to examine the demographic distribution, anatomical classification, and etiological distribution of cases of uveitis in a tertiary care centre [8].

### Background of the Study

Uveitis is a major worldly issue of blindness with about 10-15% of the sightlessness and is also a major worry of health to the general populace, especially in developing nations such as India [9]. Both the infectious and non-infectious causes influence the burden of the disease and infectious causes such as tuberculosis, toxoplasmosis and viral etiologies play an important role in disease prevalence [10]. Regional differences in exposure to the environment, systemic diseases, and socioeconomic status contribute to different epidemiology of uveitis. More recent years have seen recognition of the importance of autoimmune and inflammatory disorders like ankylosing spondylitis, sarcoidosis, and juvenile idiopathic arthritis as contributors to non-infectious uveitis [11]. Despite the development of better diagnosis techniques like imaging and laboratory tests, still a good percentage of cases remain idiopathic. Contrary to most ocular diseases, uveitis is common among people at the productive age and can result in permanent visual loss and socioeconomic cost [12]. Chronicity and recurrence of the disease also predispose the occurrence of cataract, glaucoma, and macular edema as complications, and thus early diagnosis and proper management are important.

**Clinical and Etiological Profile of Uveitis:** The clinical and etiological profile of uveitis is represented by a complex of complicated factors, including infectious, immunological, and idiopathic ones, that lead to intraocular inflammation [13]. Mycobacterium tuberculosis, herpes viruses and Toxoplasma gondii are some of the pathogens that have been largely associated with infectious uveitis, especially in regions where the pathogens are prevalent. However, non-infectious uveitis is commonly linked with systemic autoimmune diseases, and may be managed with long-term immunosuppressive therapy [14]. Among the anatomical types, anterior uveitis is the most common and tends to be associated with autoimmune disorders as compared to anterior uveitis that is more likely to be due to infectious agents. Intermediate uveitis and panuveitis affect a number of ocular structures and are mostly linked with systemic diseases, making their diagnosis and control more complicated. The clinical variability

requires extensive assessment in terms of clinical examination, imaging, and laboratory tests. These complications include cataract, glaucoma, posterior synechiae and macular edema that are prevalent and lead to high rates of visual impairment [15]. Thus, clinical patterns and etiological distribution of uveitis are needed to diagnose and treat the disease in the early stages and to prevent the loss of vision in the long run.

### Research Objectives

The objectives of the study are:

- The purpose of the study is to examine the demographic features (age and gender distribution) of patients with uveitis in a tertiary care centre.
- To categorize uveitis cases according to anatomic foci (anterior, intermediate, posterior and panuveitis)
- To establish the etiological patterns of uveitis, infectious, non-infectious, and idiopathic.
- To evaluate the prevalence and nature of complications that are related to uveitis in the study group.
- To determine the relationship between anatomical classification, age groups and etiological factors in patients with uveitis.

### Methodology

The current research was carried out on the premise of evaluating clinical picture, anatomic classification and etiological trends of uveitis patients in a tertiary care centre. To ensure reliability and validity of the results, a well-structured and systematic procedure was followed.

**Study Design:** A retrospective observational study based at a hospital setting was carried out. The aim of the research was to examine different demographic, clinical, and etiological factors of patients with uveitis.

**Study Area:** The research took place in the Department of Ophthalmology, Tertiary Care Centre in Western Gujarat

**Study Duration:** The study was conducted over a period of one year.

### Study Participants (Inclusion and Exclusion Criteria)

#### Inclusion Criteria:

- The inclusion criteria were patients with uveitis diagnosed through clinical examination and pertinent investigations.
- Both genders and patients of all ages.
- Full and sufficient medical records of the patient.

#### Exclusion Criteria:

- Patients with incomplete or missing clinical data
- Patients with postoperative intraocular inflammation
- Patients with traumatic ocular inflammation
- Patients not having sufficient documentation for diagnosis

**Sample Size:** The research used a convenient sampling method comprising of 120 patients meeting the inclusion criteria. The size of the sample was arrived at depending on the availability of eligible cases over the period of the study and feasibility.

**Procedure:** The population of the study was identified retrospectively on the grounds of medical records of the patients visiting the ophthalmology department. Data were collected by the use of a pre-structured proforma.

Information collected included:

- Socio-demographic data (gender, residence, age, etc.)
- Clinical (symptoms, duration, visual acuity)
- Anatomical (anterior, intermediate, posterior, panuveitis) and non-anatomic (diffuse) classification.
- Etiological diagnosis (infectious, non-infectious, idiopathic)
- Laboratory and imaging results (blood studies, radiological studies, ocular imaging as needed)

- Complications (cataract, glaucoma, macular edema, anterior synechiae, posterior synechiae)

Uveitis diagnosis and classification were conducted according to the standard clinical criteria, slit-lamp analysis, fundus analysis, and necessary supportive laboratory tests. All the data were recorded systematically and verified both in terms of completeness and accuracy.

**Statistical Analysis:** The data collected were analyzed and tabulated in MS Excel and SPSS 25.0. The data were summarized using descriptive statistics like mean, SD, frequency, and percentage. Where necessary, inferential statistical tests were used to determine relationships between variables, e.g., the chi-square test. The p-value below 0.05 was considered to be statistically significant.

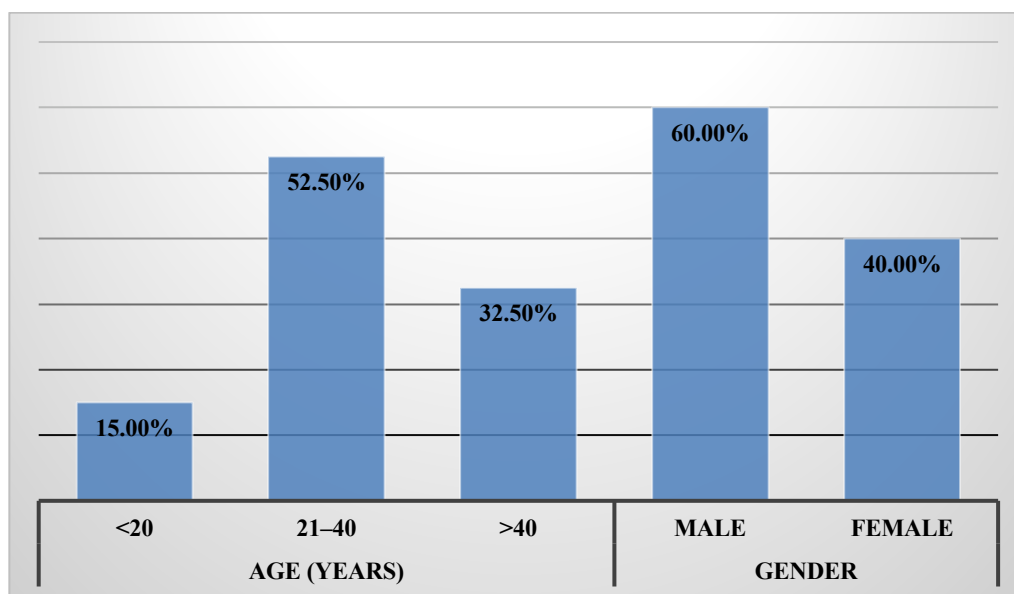
**Results**

The study involved 120 patients who had uveitis. Summarization of the data obtained was done to establish the distribution of demographic variables, anatomical classification, etiological patterns, and complications. The results are presented in the tables below.

Demographic data of study population were assessed to acquire the age and gender distribution of uveitis patients.

**Table 1: Distribution of Patients According to Age and Gender**

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	<20	18	15.00%
	21-40	63	52.50%
	>40	39	32.50%
Gender	Male	72	60.00%
	Female	48	40.00%



**Figure 1: Visual Representation of Distribution of Patients According to Age and Gender**

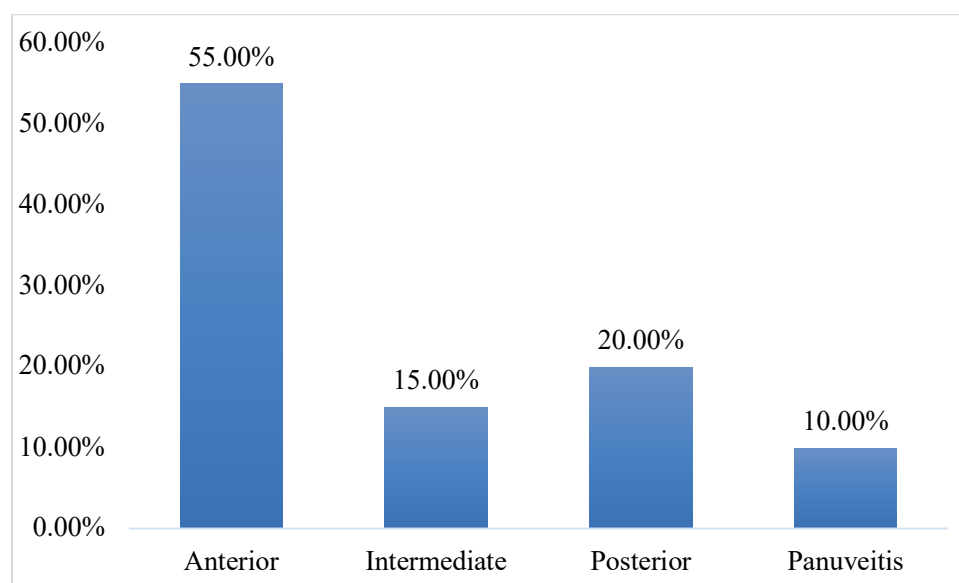
The majority of the patients (52.5%, n=63) aged 21-40 years with the result that uveitis is mainly exhibited by young people in their productive age. A higher percentage (60.0%, n=72) of patients were males compared to females (40.0%, n=48). The patients under 20 years were the least affected

(15.0% n=18). These results indicate an increased uveitis in young adult males.

The subjects of the study were assessed using the anatomical classification of uveitis which is as follows.

**Table 2: Distribution of Patients According to Anatomical Classification**

Type of Uveitis	Frequency (n)	Percentage (%)
Anterior	66	55.0%
Intermediate	18	15.0%
Posterior	24	20.0%
Panuveitis	12	10.0%
<b>Total</b>	<b>120</b>	<b>100.0%</b>



**Figure 2: Visual Representation of Distribution of Patients According to Anatomical Classification**

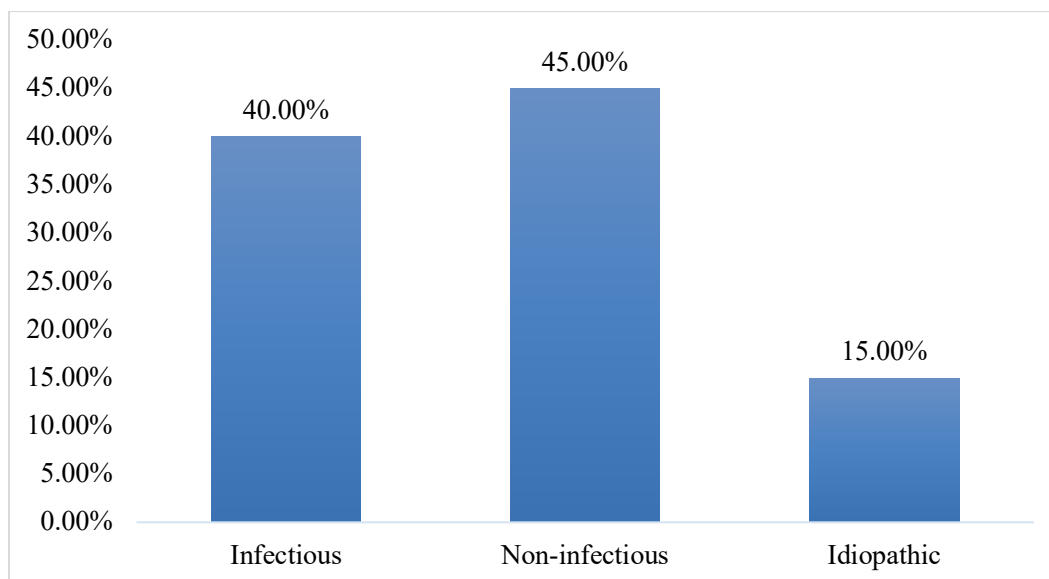
The most prevalent was anterior uveitis that was found in 55.0% (n=66) of the patients. It was found at 20.0% (n=24) and 15.0% (n=18) in the posterior uveitis and intermediate uveitis respectively. The most common was panuveitis that was observed in

10.0% (n=12) of the patients. This means that the feature of uveitis is mostly displayed in the anterior segment.

The etiological distribution of the cases of uveitis was investigated to ascertain causative factors.

**Table 3: Distribution of Patients According to Etiology**

Etiology	Frequency (n)	Percentage (%)
Infectious	48	40.0%
Non-infectious	54	45.0%
Idiopathic	18	15.0%
<b>Total</b>	<b>120</b>	<b>100.0%</b>



**Figure 3: Visual Representation of Distribution of Patients According to Etiology**

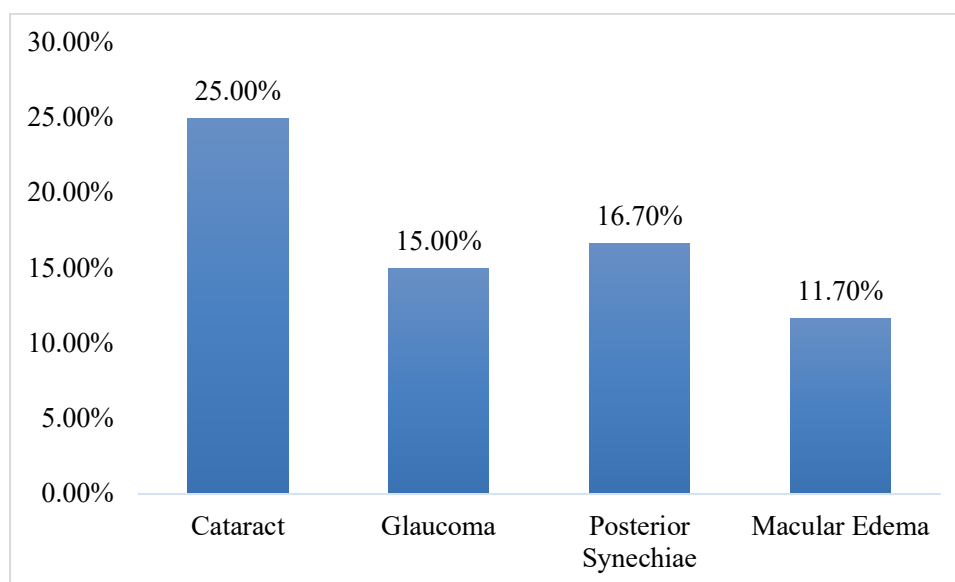
The most common causes were non-infectious causes (45.0% (n=54)) and infectious causes (40.0% (n=48) respectively. The idiopathic cases made up 15.0% (n=18) in which no specific cause

was identified. These results emphasize the wide etiological range of uveitis.

The study population was assessed on the complications that come along with uveitis.

**Table 4: Distribution of Patients According to Complications**

Complication	Frequency (n)	Percentage (%)
Cataract	30	25.0%
Glaucoma	18	15.0%
Posterior Synechiae	20	16.7%
Macular Edema	14	11.7%



**Figure 4: Visual Representation of Distribution of Patients According to Complications**

The most prevalent complication in 25.0% (n=30) of patients was Cataract. Posterior synechiae were seen in 16.7% (n=20), followed by glaucoma in 15.0% (n=18) and macular edema in 11.7% (n=14). These complications imply that uveitis may cause

severe visual impairment if it is not treated properly.

The correlation between the type of uveitis (anatomical) and the etiology was determined to identify any significant relationships.

**Table 5: Association Between Anatomical Type and Etiology**

Type of Uveitis	Infectious (n)	Non-infectious (n)	Idiopathic (n)	P-value
Anterior	20	36	10	0.032
Intermediate	6	8	4	
Posterior	16	6	2	
Panuveitis	6	4	2	

Non-infectious anterior uveitis (n=36) and infectious etiology (n=16) tended to be more common in the anterior and posterior uveitis, respectively. The statistical significance of the association between etiology and anatomic classification was found

(p=0.032). This implies that the character of uveitis can provide a clue concerning the cause of uveitis.

The correlation of age group and the type of uveitis was also studied.

**Table 6: Association Between Age Group and Type of Uveitis**

Age Group	Anterior (n)	Intermediate (n)	Posterior (n)	Panuveitis (n)	P-value
<20	10	4	2	2	0.041
21-40	38	8	12	5	
>40	18	6	10	5	

Anterior uveitis was predominant in 21-40 years age group (n=38) whereas the occurrence of posterior uveitis was relatively high in older patients (>40 years). Age and type of uveitis were found to be significantly related (p=0.041), meaning that there is a difference in the disease manifestation among ages.

### Discussion

The current research paper gives an in-depth understanding of the demographic, clinical, and etiological trends of uveitis among patients in a tertiary care centre in Western Gujarat. Results showed that the age group of 21-40 years (52.5%), as well as a clear preponderance in males (60%), was the primary affected group of uveitis (Liao N et al., 2016) [16]. This finding is not a new observation as similar studies have been done in the same environment where uveitis has been indicated to occur more frequently in young adults owing to the exposure to environmental, infectious and occupational risk factors. The increased prevalence in males could be explained by increased outdoor activity, as well as increased exposure to infectious etiologies (Gregory II A C et al., 2013) [17]. The fact that it was the anterior uveitis (55) that predominated in the present study is consistent with the literature as anterior uveitis has always been the most common anatomical form. Posterior uveitis (20%), intermediate uveitis (15%), and panuveitis (10) were less prevalent and the most severe clinical manifestation. These results highlight the fact that the inflammation of the anterior segment is the most prevalent type of uveitis in tertiary care and is frequently the first stage of clinical manifestation (Vounotrypidis E et al., 2019) [18].

Non-infectious (45%) and infectious (40%), and 15% idiopathic etiological distribution were slightly more common than the infectious causes. This shows the changing tendency of the growing

awareness of autoimmune and inflammatory diseases in uveitis, the continuing burden of infectious diseases in third world nations. The high correlation between anatomical type and etiology (p=0.032) further justifies the clinical importance of classification systems with anterior uveitis being largely related to non-infectious etiologies whereas posterior uveitis was more closely associated with infectious etiologies (Bajwa A et al., 2015) [19]. Also, the statistically significant correlation between the age and type of uveitis (p=0.041) suggests that the disease presentation differs in different age groups with anterior uveitis being more frequent among younger people and posterior progression rising with age. Other complications that were found in the study were cataract (25%), the most frequent, then the posterior synechiae (16.7%), glaucoma (15%), and macular edema (11.7%). These complications underscore the chronic and potentially sight threatening characteristic of uveitis, particularly with the late diagnosis or treatment (Dutta Majumder P et al., 2018) [20]. All in all, the results support the significance of early diagnosis, proper etiological assessment, and prompt management to minimize morbidity and avoid long-term visual impairment related to uveitis.

### Conclusion

The current paper concludes that uveitis is a major and possibly vision-impairing eye disease that occurs more frequently in people of productive age, although it is more common in males. The most common anatomical type was found to be anterior uveitis, with the subsequent ones being anterior, intermediate and panuveitis, suggesting that the anterior segment involvement is predominant in clinical presentations. Infection and non-infection etiologies played an important role in the disease burden with non-infectious etiologies a little more common, and a significant number of cases were

idiopathic, which is indicative of the difficulty in identifying the cause of uveitis. Another important finding of the study was that the prevalence of complications like cataract, posterior synechiae, glaucoma, and macro-edema was quite high and therefore demonstrates that the disease is chronic, recurrent and may be disabling in the case of untreated cases. Moreover, statistically significant correlations of anatomical classification, age groups and etiological factors substantiate the importance of a multidimensional and hierarchical approach to diagnosis. Overall, the findings highlight the significance of early diagnosis, appropriate etiological diagnosis and prompt and specific management interventions to minimize the number of complications, improved patient visual outcomes and the socioeconomic burden of uveitis in the long term.

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