

## “Prevalence of Pterygium and Visual Impairment in Patients at a Tertiary Care Centre of Etawah District: A Hospital Based Study”

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### Abstract

**Introduction:** Pterygium is a non-malignant, slow growing, wing shaped proliferation of the fibro vascular tissue, which is arising from the sub-Conjunctival tissue, which may extend over the cornea and thus disturbing the vision.

**Background and Purpose:** To assess the prevalence of Pterygium and Visual impairment in patients at a tertiary care centre of Etawah district.

**Methods:** A cross-sectional study was done over a period of 3 months on both genders with the categorised age group and into grades according to the size of the Pterygium in the Department of Ophthalmology at UP University of Medical Sciences hospital Saifai, Etawah. After taking an informed consent a total of 2100 patient were examined by eye screening and diagnosed with the help of ophthalmologist in which 130 patients were found with Pterygium problem. Out of these 94 patients (135 eyes) was found purely with Pterygium in one or both eyes and the rest 36 were excluded because of other associated morbidities. The selected participants underwent assessment by eye examination sheet and the subject undergone specific test. The data were recorded on the basis of set predesigned, pretested, semi structured questionnaires and the grading was done with the help of slit lamp examination. The data was collected and analyzed using chi square test.

**Result and conclusion:** A high prevalence of Pterygium was found in patients working in outdoor (76.29%) in comparison to indoor (23.70%) because of exposure to sunlight.

### Introduction

Pterygium is a non-malignant, slow growing, wing shaped proliferation of the fibro vascular tissue, which is arising from the sub-Conjunctival tissue, which may extend over the cornea and thus disturbing the vision (Garg 2009).

Pterygium is a common condition of the eye, the existence of which was well recognized at the time of Hippocrates (460-375 BC) and Celsus who described it as Urigus in his manuscripts. The earliest description of Pterygium is available in the texts of the great surgeon of ancient India, Sushruta (3000 BC) who called it as ‘Armans’. In India, it is called ‘Nakoon’ in Hindi, due to its resemblance to a nail, in its shape (Sanjeev 2013).

Pterygium is associated with a wide spectrum of factors like sun and UV light, which is the reason why Pterygium is more prevalent in tropical regions (Luthra 2001).

Moreover; Pterygium is associated with factors like age, sex, ethnicity (Chen S 2012). It most commonly found in the population exposed to dry, dusty, windy, and warm weather. It affects the people exposed to U.V. radiations & Infrared radiation. E.g.-farmers, welders etc.

Its prevalence ranging between 0.7% and 33% globally. For management of this condition, surgery is done like bare Scleral technique with or without mitomycin C, Conjunctival auto graft, amniotic membrane graft etc. (Droutsas 2010). The recurrence rate after the surgery is between 30% and 90% (KZheng 2012).

(Taylor and colleagues 1992) found a statistically significant association between the ultraviolet light exposure (both UV-A and UV-B) and a development of Pterygium in a large group Chesapeake Bay Fishermen.

## Methods

This study was cross-sectional in nature where the objective is to determine the prevalence of Pterygium in at least one eye in patients attending ophthalmology OPD of a tertiary eye care centre in the district Etawah and also to assess the visual impairment in patients with Pterygium. The study was done in the Department of Ophthalmology at UP University of medical Sciences hospital, Saifai, Etawah.

After taking an informed consent from the patient a total of 2100 of routine patients were examined by eye screening using torch light examination, slit lamp examination and vision screening using snellen's chart. A diagnosis of Pterygium was made by the ophthalmologist in whom 130 patients were found with pterygium. The data was collected over a period of 3 months in both genders. Out of these 94 patients (135 eyes) was found purely with Pterygium in one or both eyes and the rest 36 were excluded because of other associated morbidities.

The selected participants underwent assessment by eye examination sheet which includes subjective examination and the subject undergone specific tests (Uncorrected Visual acuity (UCVA), best corrected visual acuity (BCVA), Visual acuity with present glasses, refraction, and slit lamp examination for grading of Pterygium).

An interview was conducted with each participant to collect data on the basis of set predesigned ,pretested ,semi structured questionnaires which includes socio demographic profiles and descriptive factors like Age, sex, locality, (rural/urban), history of sun exposure, occupation, use of protective glasses , behavioral lifestyles (alcohol consumption and cigarette smoking), family history of eye disease.

The patients who were attending OPD of Ophthalmology department during the study period was included in the study while those who exhibit absence of Pterygium, Cataract, history of trauma in eye, any opacity or scar, Pseudophakia were excluded from the study. The selected patients were divided into 4 groups A, B, C & D on the basis of ages of the patients for assessing most commonly affected group (Group A – 0-20 years; Group B -21-40 Years; Group C – 42- 60 years and Group D - >60 years) and into grades I to IV on the basis of the size of Pterygium (Grade I - Just touching the cornea ,Grade II - Encroaching the cornea, Grade III - Touching the pupil ,Grade IV - Covering the pupil.To determine the prevalence of Pterygium the group is divided into gender (Male and Female) and exposure to work (Indoor and outdoor) as shown in Table-2.

These selected patients were further categorized and assessed by determining the sides of Pterygium, position of Pterygium and other examination as shown in Table -2 The table shows that Pterygium is most commonly seen in smokers, Uniocular, bilateral.

**Table 1.** Positions, sides of pterygium and other examinations

<b>SIDES</b>	
Uniocular	68.88%
Binocular	31.11%
<b>POSITION</b>	
Nasal	17.03%
Temporal	2.22%
Bilateral	80.74%
<b>OTHER EXAMINATION</b>	
Smokers	11.11%
Non-smokers	88.88%

**Statistical analysis:** The prevalence of Pterygium in at least one eye or both eyes was considered therefore a person whose right or left eye has a Pterygium is considered as a case of Pterygium. The percentage Pterygium along with 95% confidence intervals (CI) was considered in the design effect. Changes were considered significant based on a significance level of 5%. The data was analyzed using chi square test and by using the software statistical package for social sciences (SPSS).

## Result

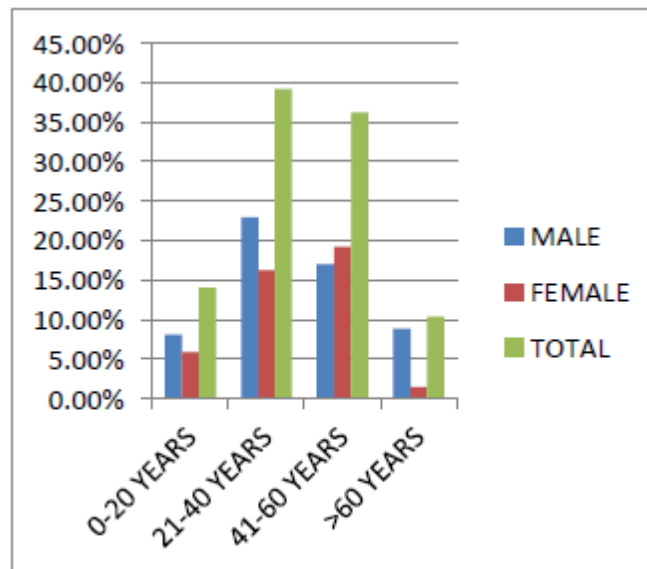
A total of 2100 patients were examined through sampling, out of which 130 patients (prevalence rate = 6.6) were found with Pterygium. Out of 130, 36 of them had other morbidities hence only 94 (135 eyes) were evaluated for study. The mean age of the study participants was 39.25%. The prevalence of Pterygium by gender and exposure is presented in Table2.

**Table2.** The Prevalence of Pterygium by gender and exposure

GENDER WORK	MALE	FEMALE	TOTAL
OUTDOOR	75(55.55%)	28(20.74%)	103(76.29%)
INDOOR	1(0.74%)	31(22.96%)	32(23.70%)

The prevalence of Pterygium was 76.29% in outdoor Male and Female while 23.70% in Indoor Male and Female (95%CI: Chisquare value =48.19: df=1: P=0.00001). According to Table 1, the prevalence of Pterygium was higher in outdoor males (55.55%) than outdoor females (20.74%) as compared to indoor males (0.74%) and indoor females (22.96%), but the difference was not significant. The indoor male and female ratio were comparatively low.

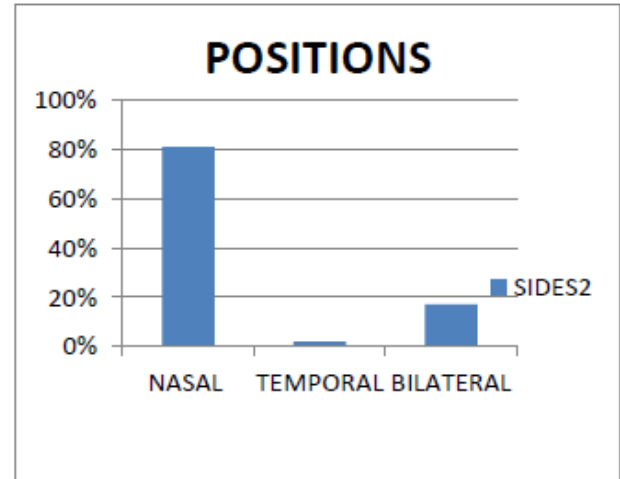
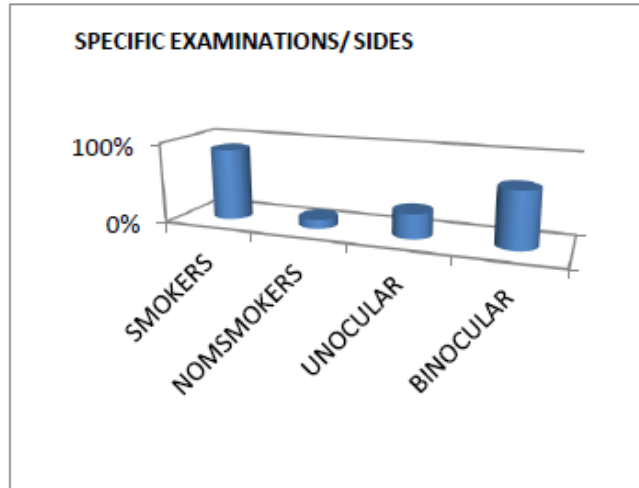
A multiple model was used to evaluate the relationship of the prevalence of Pterygium with age groups, Position of Pterygium and Side of Pterygium. The results are presented in the form of bar graphs (a & b) and in the tabulation forms in Table 3 and 4.



### a) Prevalence of pterygium with age group

The Maximum percentage of Pterygium was noticed in the age group 21-40years. This is in close age concordance with findings of Sanjeev Rohati et al. (31-40 years), A Fotouhi (20-39years). The higher percentage of Pterygium is also found in the age group 0-20years (14.07%) which was high in comparison to other studies of a frotouhi et al, Veena Bhardwaj et al. (1.33%). This may show an early onset of Pterygium in this area.

The percentage of Pterygium was high in smokers (89%) then in non smokers (11%) and the Pterygium was found high binocularly (69%) then unilaterally (31%). The Pterygium was high in nasal side (81%) then in temporal (2%) and bilateral (17%).



### b) Prevalence of Pterygium with Position and sides of Pterygium.

This study shows that the prevalence increases with the age till 60 years of age and then declines as compare to study of Hasemi et al. The size of Pterygium is greater in the age group of 21-40 years Males (Grade 1 =12.59%); female (11.85%).

**Table 3.** Description of patients according to age group and grades of Pterygium

AGE GROUP	GENDER	GRADE I	GRADE II	GRADE III	GRADE IV
0-20 (A)	M	6 (4.44%)	5 (3.70%)	-	-
	F	5 (3.70%)	3 (2.22%)	-	-
21-40(B)	M	17(12.59%)	12(8.88%)	2(1.48%)	-
	F	16(11.85%)	5 (3.70%)	2(1.48%)	-
41-60(C)	M	12 (8.88%)	10(7.40%)	-	1 (0.74%)
	F	16(11.85%)	7 (5.18%)	-	2 (1.48%)
>60 (D)	M	5 (3.70%)	3 (2.22%)	2(1.48%)	2 (1.48%)
	F	-	2 (1.48%)	-	-

Best corrected visual acuity (BCVA) was found in Grade I of Pterygium as given in Table -3. Grade IV affects vision more in comparison to grade III, grade II & grade I (chi square value =27.26: df = 6: P <0.05:CI = 95%). The negative effect of grades of Pterygium over visual acuity is given in Table: - 4 and is as follows (Grade IV> Grade III > Grade II > Grade I).

**Table 4.** Effects of Pterygium grades on visual acuity.

<b>GRADES</b>	<b>6/6</b>	<b>6/9</b>	<b>6/12</b>	<b>6/18 &amp; more</b>
<b>Gr. I</b>	<b>55(40.74%)</b>	<b>19(14.07%)</b>	<b>2(1.48%)</b>	<b>1(0.74%)</b>
<b>Gr. II</b>	<b>31(22.96%)</b>	<b>8(5.92%)</b>	<b>5(3.70%)</b>	<b>3(2.22%)</b>
<b>Gr. III</b>		-	<b>1(0.74%)</b>	-
<b>Gr. IV</b>	-	<b>1(0.74%)</b>	-	<b>4(2.96%)</b>

## Discussion

In this study, we evaluated the prevalence of Pterygium and visual acuity in tertiary eye care center in the district of Etawah. The prevalence of Pterygium was found higher in the age group of 21-40 years (39.25) in our study.

(Ma.K and colleagues 2007) explained that Pterygium is an ocular disease that is very much associated with the environment, occupation, climate, dust, and lifestyle all of which may contribute to its higher prevalence in the rural population

(Panchapakesan. J 1998) and (MC Carty CA 2000) found in their study, the prevalence of Pterygium was higher in men than women. Different studies have confirmed this finding. one of the reasons could be more outdoor activities of men as compared to women and their related occupational conditions are also a triggering factor to it.

(Karai. L 1984) and (Shiroma. H 2009) concluded that the general men more often do jobs like welding, farming, ranching, and fishing than women which is associated with higher prevalence of Pterygium.

(Lu. P and colleagues 2007) prove in their study that women were at a higher risk than men which seems to be associated with their lifestyle and outdoor activities. In our study, the prevalence of Pterygium increases with age.

## Conclusion

From this study we may conclude that most of the cases were seen in young and middle-aged people in between age group of 21-60 years (75.55%) because most of them used to work in outdoor, heat and dusty environment. Diminution of vision occurs with the increase in the size of Pterygium.

The present study had some strengths and weaknesses. The strengths of this study are its clinical information collected about Visual Acuity, Severity of Pterygium and the eye affected. The weaknesses of this study are that we could access data only on sun exposure, heat and dusty environment not on smoking and dry eye, which are also important risk factors for Pterygium.

## References

- [1]. Chen S, Huang J, Wen D, Chen W, Huang D, Wang Q. Measurement of central corneal thickness by high-resolution Scheimpflug imaging, Fourier-domain optical coherence tomography and ultrasound pachymetry. *Acta Ophthalmol.* 2012;90(5):449e455.
- [2]. Garg Ashok, Toukhy Essam EL, Nassaralla Belquiz A, Moreker Sunil. Surgical and medical management of Pterygium. 2009.
- [3]. K. Droutsas and W. Sekundo, "Epidemiology of Pterygium: a review," *Ophthalmology*, vol.107, no. 6, pp.511-516, 2010.
- [4]. K. Zheng, j. Cai, V. jhanji, and H. Chen, "Comparison of Pterygium recurrence rates after limbal conjunctival auto graft transplantation and other techniques: meta-analysis," *Cornea*, vol.31, no.12, pp.1422-1427, 2012.
- [5]. Karai I, Horiguchi S. Pterygium in welders. *Br J Ophthalmol.* 1984;68(5): 347e349.
- [6]. Lu P, Chen X, Kang Y, Ke L, Wei X, Zhang W. Pterygium in Tibetans: a population-based study in China. *Clin Exp Ophthalmol.* 2007;35(9): 828e833.
- [7]. Luthra R, Nemesure BB, Wu S-Y, Xie SH, Leske MC. Frequency and risk factors for pterygium in the Barbados Eye Study. *Arch Ophthalmol.* 2001; 119(12):1827e1832.

- [8]. Ma K, Xu L, Jie Y, Jonas JB. Prevalence of and factors associated with Pterygium in adult Chinese: the Beijing eye study. *Cornea*. 2007;26(10): 1184e1186.
- [9]. McCarty CA, Fu CL, Taylor HR. Epidemiology of Pterygium in Victoria, Australia. *Br J Ophthalmol*. 2000;84(3):289e292.
- [10]. Panchapakesan J, Hourihan F, Mitchell P. Prevalence of Pterygium and pinguecula: the Blue Mountains Eye Study. *Aust N Z J Ophthalmol*. 1998; 26(S1): S2eS5.
- [11]. Sanjeev Rohatgi. Department of Ophthalmology, Pterygium: An epidemiological study in India. 4 July 2013: 1. E Mail id: snjvrohatgi@yahoo.co.in.
- [12]. Shiroma H, Higa A, Sawaguchi S, et al. Prevalence and risk factors of Pterygium in a southwestern island of Japan: the Kumejima Study. *Am J Ophthalmol*. 2009; 148(5):766e771.
- [13]. Taylor HR, West S, Munoz B, Rosenthal FS, Bressler SB, Bressler NM. The long- term effects of visible light on the eye. *Arch Ophthalmol*. 1992; 110:99-104.