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# Incidence of Pterygium in Teenagers -A Clinical Study.

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## ABSTRACT

**Background:** Aim: The aim of our study was to evaluate increasing occurrence of pterygium in young individuals and to suggest methods for its prevention. **Methods:** This was a hospital based prospective observational study carried out for a period of one year. A total of 30 eyes of 25 patients were taken who were diagnosed to have pterygium on slit lamp examination. All patients were less than 20 years of age. Patients who presented with complaints of irritation, redness and mass in the eyes were included in our study. Patients with history of trauma and chemical injuries were excluded in this study. All selected patients underwent detailed ophthalmic examination including visual acuity, refraction, slit lamp examination and fundus evaluation. The side, progression, position, autorefractometry and keratometry were noted in each and every patient. **Results:** A total of 30 eyes of 25 patients were included in our study among which 21 (84.0%) were males and rest 4 (16.0%) females. All of our patients belonged to age group 11-20 yrs. The complaint of pterygium was found more in patients who belonged to rural background (18, 72.0%). 5 (20.0%) patients had bilateral pterygium and rest 20 (80.0%) had complaint in only one eye. Majority of our patients had pterygium on nasal side (21, 84.0%), 3 of them on temporal side (12.0%) and one on both sides (4.0%). Majority of them had concern with cosmesis followed by diminution in vision and irritation in the eyes. Almost all of them (24, 96.0%) spent their time outdoors while work and play. Pterygium was graded as grade 1 when it just touched the limbus, grade 2 when pterygium was at half the distance between the limbus and pupillary margin, grade 3 when pterygium reached the pupillary margin and grade 4 when it crossed the visual axis to the other side. All of our patients had grade 1 and 2 pterygium. **Conclusion:** The prevalence of pterygium has been on a rise in these recent years in young individuals. Hence, adequate precautions like wearing protective glasses, hooded caps, brimmed hats etc. should be advised to young individuals in order to prevent them from pterygium. All of them should be educated for safety measures in order to prevent pterygium and hence to lead a good quality of life.

***Keywords:*** Pterygium, Young individuals, Grading of pterygium, UV radiation.

## INTRODUCTION

Pterygium is a commonly encountered condition in eye. The word pterygium derives its existence from Greek language word "pterygos" which means "little wing" due to its resemblance with the shape of a wing. The existence of pterygium has been reported from the times of Hippocrates and Sushruta. Sushruta in his literature described pterygium as "Armans". Indians usually refer to this condition as "Nakhoona" a word from devanagri script meaning "nail" due to its resemblance with the same. Pterygium is an acquired, superficial, benign, wing-shaped, elevated, elastotic, fibrovascular degeneration of bulbar conjunctiva that encroaches the cornea often at nasal limbus.[1,2] The prevalence of pterygium is estimated to be from 3% in Australia to 30% in Japan. In India its prevalence is found to be around 7%.[3-8] In a study from Central part of India prevalence of pterygium was reported to increase with advancing age with 6-7% in third decade and 25-26% in seventh decade.

This condition is usually symptom free in its early stages except for cosmetic complaint but on advancement it can lead to visual problems in form of irregular corneal astigmatism and obscuration of visual axis.[9,10] One can find corneal opacity once cornea has been invaded. The common complaints of subjects include watering, gritty sensation, itching, redness and diminution of vision. The major risk factors for degeneration include ultraviolet radiation exposure, exposure to wind and dust, dry climatic conditions and genetics.[11-20] Vascular endothelial growth factor (VEGF) overexpression can also play a role in pathogenesis of pterygium.[21] Advancing age, male sex, hypertension, increased outdoor activities and occupation.[3,5,15,22]

Various classification schemes have been proposed for classifying pterygium. Tan et. al.[23] classified it into 3 types on the basis of visibility of episcleral vessels i.e. type 1 if episcleral vessels are fully visible, type 2 if fairly visible and type 3 is fully obscured. They also found that people who used to

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work outdoors were most likely to develop fleshier pterygium and had more chances of recurrence on excision along with bare sclera technique.[24] Mahar and Manzar,[25] classified pterygium on basis of involvement of cornea as grade 1 when pterygium involved less than 25% of corneal diameter, grade 2 if involvement was between 25-50%, grade 3 if it obscured pupillary axis and involved more than 50%of cornea. They found that greater the amount of cornea was involved, greater was the chances of recurrence after surgery.

Obscuration of pupillary axis, symptomatic pterygium and cosmetic appearance are the major indications for surgical removal. Pterygium excision is associated with high risk of recurrence hence various methods have been proposed in order to minimize recurrence.[26] Simple excision of pterygium along with mitomycin-C application can be done in cases having less chances of recurrence while excision along with conjunctival autograft or amniotic membrane transplantation may be tried in subjects with high recurrence chances.

The peak incidence of occurrence of pterygium has been reported between second to fourth decades of life. This condition is rarely seen in young individuals and more common above age of forty years. However, children who spend most of their time playing outdoors in sun can get affected from pterygium. The aim of our study was to evaluate increasing occurrence of pterygium in young individuals and to suggest methods for its prevention.

## MATERIALS AND METHODS

This was a hospital based prospective observational study carried out in Regional Institute of Ophthalmology, Institute of Medical Sciences, Banaras Hindu University Varanasi for a period of one year. Ethical Committee clearance was obtained and tenets of Declaration of Helsinki were followed.

A total of 30 eyes of 25 patients were chosen who were diagnosed to have pterygium on slit lamp examination.

**Inclusion Criteria**

Patients who presented with in OPD with complaints of irritation, redness and mass in the eyes and were less than or equal to 20 years of age were included in our study.

**Exclusion Criteria**

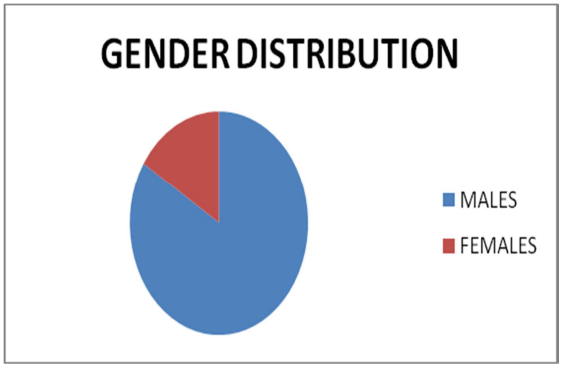
Patients with history of trauma, any previous surgery, pinguecula, pseudopterygium and chemical injuries were excluded from this study.

The particulars of the patients pertaining to risk factors of disease like age, gender, occupation, family background were noted. Pterygium was graded into four grades on the basis of corneal involvement: Grade 1: upto limbus, grade 2: mid way between pupil and limbus, grade 3: extension upto pupillary margin and grade 4: crossing pupillary margin.

All selected patients underwent detailed ophthalmic examination including visual acuity, refraction, anterior segment slit lamp examination and fundus evaluation. Examination pertaining to pterygium included: side (right, left or both), progression (progressive or atrophic), position (nasal, temporal or both), autorefractometry values and keratometry were noted in each and every patient.

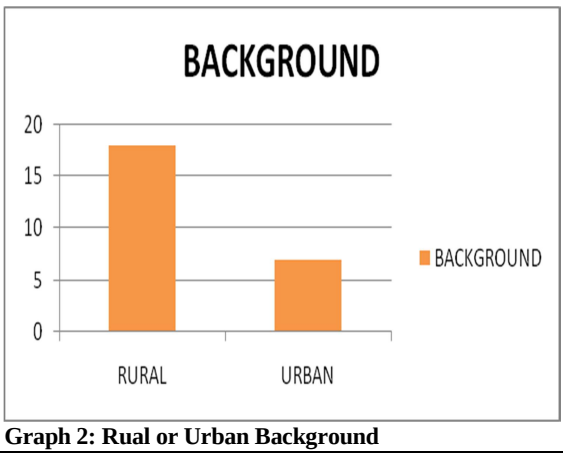
## RESULTS

Around 93,000 people attended our OPD in one year. Among these, 4 percent of people were within age group 11-20 years. Hence prevalence of pterygium in this age group in our study was around 0.6%. A total of 30 eyes of 25 patients were included in our study among which 21 (84.0%) were males and rest 4 (16.0%) females.




**Graph 1: Gender Distribution**

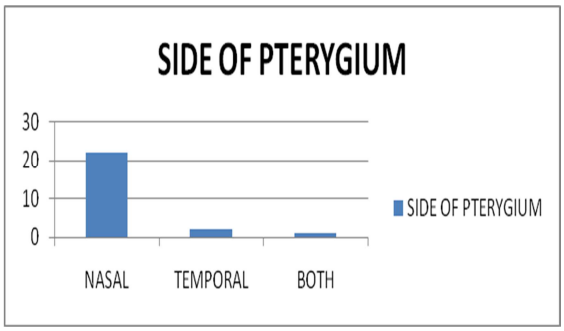
All of our patients belonged to age group 11-20 yrs. The complaint of pterygium was found more in patients who belonged to rural background (18, 72.0%) as those who came from urban background.




**Graph 2: Rual or Urban Background**

20 (20.0%) patients had unilateral pterygium and rest 5 (80.0%) had complaint in both the eyes.

Majority of our patients had pterygium on nasal side (22, 88.0%), 2 of them on temporal side (8.0%) and one on both sides (4.0%).




**Graph 4: Bar Chart Showing Side Of Pterygium**

Majority of them had concern with cosmesis followed by diminution in vision and irritation in the eyes. Almost all of them (24, 96.0%) spent their time outdoors while work and play. Pterygium was graded as grade 1 when it just touched the limbus, grade 2 when pterygium was at half the distance between the limbus and pupillary margin, grade 3 when pterygium reached the pupillary margin and grade 4 when it crossed the visual axis to the other side. All of our patients had grade 1 and 2 pterygium. 19 (76%) patients had grade 1 and remaining 6 (24%) had grade 2 pterygium. Visual acuity was 6/6 to 6/9 in all patients with mild myopic correction in few cases. 5 of them demonstrated astigmatism with flattening of vertical axis.

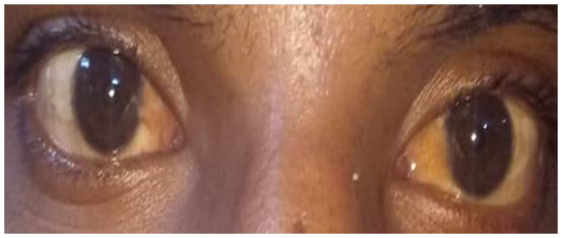


**Figure 1: A 18 Year Old Male With Grade 2 Bilateral Eye Pterygium**

**Figure 2: A 16 Yr Male with Unilateral Left Eyegrade 1 Pterygium**

**Figure 3: A 14 Yr Male With Unilateral Right Eye Grade 1pterygium**

**Figure 4: A 19 Yr Male With Bilateral Eye Grade 1 Pterygium**

## DISCUSSION

We found the prevalence of pterygium in young individuals around 0.6% in our study. To our knowledge, this is the first study where we report prevalence of pterygium in young individuals only. Overall prevalence of pterygium in all age groups has been reported to be around 11.7% in South Indian Andhra Pradesh Eye Disease study and 9.5% in Tamil Nadu.[27,28] There is a wide difference in pterygium prevalence as reported in various studies worldwide such as 0.70% in Copenhagen.[29]

Such vast variation in prevalence between different studies can be because studies conducted in different parts of world with their unique climatic conditions, lifestyle of study groups, advances in technology, and study designs.

In our study, males (84.0%) were found to be more affected than females (16.0%) in this age group. Higher affection in males can be explained on the basis of higher exposure in dust, heat, sun and wind while doing their outdoor work for play or for their earning. Thus, exposure to irritants in air is one of the factors causing pterygium by chronically irritating conjunctiva. However, Zhong et al.[30] reported more incidences in females around 23.70%.

Majority of our subjects suffered from bilateral disease (80%). This can be accounted for the reason that pterygium usually starts in early decades of life with unilateral involvement and then gradually develops bilaterally.

The complaint of pterygium was found more in patients who belonged to rural background (18, 72.0%) as those who came from urban background. Also, almost all of them (24, 96.0%) spent their time outdoors while work and play. This again explains the role of environmental factors in etiology of pterygium as people living in villages are more prone to get exposed to atmospheric irritants, dust, sun glare and heat. It has also been proven that farmers and labourers have habit of working in such conditions hence have more chances of developing pterygium as also found by Elliot & Talbot in their work.[31,32]

Higher rate of occurrence of pterygium on medial or nasal side can be explained because of direction of flow of tears which flow from lateral to medial side

towards nose and medial canthus. Nasal occurrence of pterygium more because of UV light transmission to nasal side through corneal stroma from temporal side thus explaining more occurrence of fleshy mass on nasal side. Majority of our patients had pterygium on nasal side (22, 88.0%), 2 of them on temporal side (8.0%) and one on both sides (4.0%) in our study.

Mackenzie et al,[13] performed study on pterygium risk factors and proposed a strong association between ultra violet radiation exposure in young age and development of pterygium. Reflected UV radiation via cumulative exposure in work areas in second and third decade were also supposed to play important role in development of pterygium.[3] Some occupations are associated with higher risk of developing the disease such as policemen, labourer, farmers and vendors.[33] Previous researchers reported that regular use of protective glasses at work area can decrease the incidence of pterygium. These protective glasses block UV radiation from causing harmful effect on eye. Hence, population especially those at risk must be educated for prevention of this disease.

## CONCLUSION

The prevalence of pterygium has been on a rise in these recent years in young individuals. Incidence of pterygium was less in females (16%) than in males (84%). Incidence of pterygium was more in those belonging to rural background and in those who spent a major part of the day outside in sun. Hence, adequate precautions like wearing protective glasses, hooded caps, brimmed hats etc. should be advised to young individuals in order to prevent them from pterygium. All of them should be educated for safety measures in order to prevent pterygium and hence to lead a good quality of life.

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