**ORIGINAL RESEARCH ARTICLE**

# The Study of clinical Profile of Patients Presenting with Pseudoexfoliation in Ophthalmology OPD at MGM's Hospital Aurangabad [MS].

**Shweta Kosamia[1], Jyotika P. Mishrikotkar[2], Yogita Phadke[3] & Arpit Shah[4]**

[1]Resident, [2]Professor and Head,[3] Assistant professor, [4]Senior Resident, Department of Ophthalmology , MGM's Medical College and Hospital, Aurangabad [MS], India

**Abstract:**

**Introduction Pseudoexfoliation (PEX) syndrome is an age-related systemic disease with primarily ocular manifestations characterized by deposition of whitish-gray fibrillogranular amyloid like material on the anterior lens capsule, zonules, cilliary body, pupillary margin of the iris, corneal endothelium, anterior vitreous and trabecular meshwork Material and Methods: The study included 540 patients of age 45 years and above, of either sex who came to the ophthalmology OPD of MGM Hospital & Medical College, Aurangabad during the period from September 2012 to August 2014. Results: In present study 540 peoples of both gender of age 45 years and above were enrolled. The prevalence of Pseudoexfoliation Syndrome found to be 5.92%. Out of 540 patients 21 (9.05%) males were found to have pseudoexfoliation as compared to 11 (3.98%) females. The prevalence of PXF is found to increase with age in this study. Maximum prevalence is 11.56% in 61- 70 years of age group. The youngest patient with pseudoexfoliation was 55 years old. *Pseudoexfoliation syndrome may cause a spectrum of serious ocular and surgical complications. The problems related to cataract surgery are mainly initiated by zonular instability and, to some degree, by insufficient pupillary dilation. Thus awareness of the structural and functional features of this disorder may help avoid or minimize most of them.***

**Keywords: Primarily Occular, anterior lens, Pseudoexfoliation, *cataract.***

## Introduction:

Pseudoexfoliation (PEX) syndrome is an age-related systemic disease with primarily ocular manifestations characterized by deposition of whitish-gray fibrillogranular amyloid like material on the anterior lens capsule, zonules, cilliary body, pupillary margin of the iris, corneal endothelium, anterior vitreous and trabecular meshwork [1,2]. The lens frequently demonstrates a "three-ring sign" on the anterior lens capsule which consists of a relatively homogenous central zone and a granular cloudy peripheral zone with a clear zone in between. The most important and easily recognizable diagnostic sign of pseudoexfoliation is whitish-grey flaky material on the pupillary border of the iris or on the anterior surface of the lens. Pigment loss from the iris sphincter region and its deposition on anterior chamber structures support the diagnosis. Detection of these signs requires a careful clinical examination using dilated slit-lamp biomicroscopy and additionally undilatedgonioscopy, but frequently pseudoexfoliation are undiagnosed, which can lead to unexpected problems in management and during surgery. The awareness of the significance of pseudoexfoliation has increased considerably in the latest decade. Despite extensive research, the exact chemical composition of the exfoliation material remains still unknown.

**Address for correspondence:**
**Dr. Shweta Kosamia,**
**Resident,**
**Department of Ophthalmology,**
**MGM'S Medical College and Hospital,**
***Aurangabad, Maharashtra, India.***
**Email:** skosamia@gmail.com

How to cite this article:
Shweta Kosamia, Jyotika P. Mishrikotkar, Yogita Phadke & Arpit Shah: The Study of clinical Profile of Patients Presenting with Pseudoexfoliation in Ophthalmology OPD at MGM's Hospital Aurangabad [MS]. International Journal of current Medical and Applied sciences; 2016, 12(3),166-171.

Access this Article Online

Website: www.ijcmaas.com

Quick Response Code

**Subject: Medical Sciences**

Pseudoexfoliation syndrome occurs in all areas of the world with varying frequency. There is a high prevalence of pseudoexfoliation syndrome in Scandinavian countries, Arabic populations and in Oman [3,4],whilst it is relatively rare among African Americans, Eskimos and Canadian Arctic populations. Its prevalence increases steadily with age and is rarely seen before the age of 50 with female preponderance [5]. Genetic factors influencing pseudoexfoliation has been explored considerably in the latest decade [6].

Exfoliation of fibril logranular amyloid-like material has also been found in many organs such as skin, heart, lungs, liver, kidney, gall bladder, blood vessels, extra-ocular muscle, connective tissue in the orbit, optic nerves and meninges suggesting that the pseudoexfoliation syndrome is not only an ocular disease but also a general disorder that involves the abnormal production of extracellular matrix material [7,8]. Recent investigations have shown the positive link between pseudoexfoliation and transient ischemic attacks, stroke, heart disease and aneurysms of the abdominal aorta [8,9]. Although the exact etiology of this condition as well as the exact structure of the material is still unknown. It is presumed that the production of pseudoexfoliation material is associated with abnormal metabolism of glycosaminoglycans and thus abnormalities of the basement membrane in the epithelial cells.

Thus pseudoexfoliation syndrome presents challenges that need careful preoperative planning and intra-operative care to ensure safe surgery and a successful postoperative outcome. This study is thus conducted to determine the prevalence of PXF in all patients 45 years and above.

The aim of present study was to know the prevalence of pseudoexfoliation in all patients 45 years and above and to know the extent of the involvement of pseudoexfoliation in the eyes.

## Materials and Methods:

**Source of Data**: The study included 540 patients of age 45 years and above, of either sex who came to the ophthalmology OPD of MGM Hospital& Medical College, Aurangabad.

**Inclusion Criteria;** All patients above 45 years of age and who are willing to give consent.

**Exclusion Criteria:** Trauma to eye, Congenital or developmental cataract were excluded and People having occupation in which they are exposed to infrared radiation.

**Method of Collection of Data;** Written informed consent was obtained from all participants before the commencement of examination. Relevant details in medical and ocular history were taken. Assessment of vision using Snellen's chart for distant vision and Jaeger's chart for near vision was done. Torchlight examination was performed.

Intraocular pressure (IOP) was measured by applination tonometer before dilatation of the pupil under topical anesthesia. Three consecutive readings were taken if IOP was more than 21mmHg.

Peripheral anterior chamber depth was determined on slit lamp by using the Van Herrick's method, with the temporal peripheral anterior chamber examined under optical section at 15 X magnifications. The Van Herrick technique uses a thin slit beam focused at the limbus to approximate angle depth by comparing the peripheral anterior chamber depth to corneal thickness. A grade 1 has a peripheral AC depth > 1quarter corneal thickness. Grade 2 is 1 quarter corneal thickness. Grade 3 is one – half thickness. Grade 4 is 1 corneal thickness or more.

After pupil dilatation with dilating drops (tropicamide plus), examination of the anterior segment was done and fundus examination was done to see the retina and optic nerve.

Examination of the eye was done to see for presence of PXF material on all structures (Cornea, Iris, Lens, and Pupil).

Pseudoexfoliation was diagnosed clinically by the presence of typical pseudoexfoliation material (PXF) at the pupil border on undilated examination on tourch light examination and on anterior lens capsule on dilated examination.

Cataract was graded on the slit lamp with respect to nuclear opalescence (NO: 1-6), nuclear color (NC: 1-6), cortical (C: 1-5) and posterior subcapsular (P: 1-5) cataract, using the Lens Opacities Classification System (LOCS) III.

The optic disc was evaluated with a 90-D lens. Following points were considered for diagnosis of glaucoma-

- Asymmetry of the cup:disc ratio (>0.2) between the two eyes.
- A localized notch or thinning of the neuro-retinal rim.
- An enlarged cup: disc ratio (>0.5), especially if in the vertical axis.
- Pallor of the neuro-retinal rim.
- Superficial disc hemorrhages.
- Vascular signs suggestive of acquired cupping, such as barring of circumlinear vessels and 'overpass' of central vessels.
- Parapapillary atrophy.

Gonioscopy was performed with a Goldmann two-mirror gonioscope under standard low ambient illumination in all patients having pseudoexfoliation to find out presence of PXF, angle closure glaucoma, excessive pigmentation.

Finally, automated perimetry (Humphrey Visual Field Analyzer II) was performed with refractive correction in all participants suspected to have glaucoma if indicated.

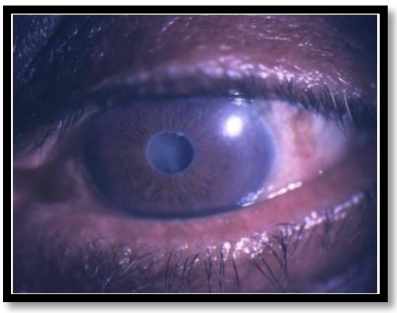
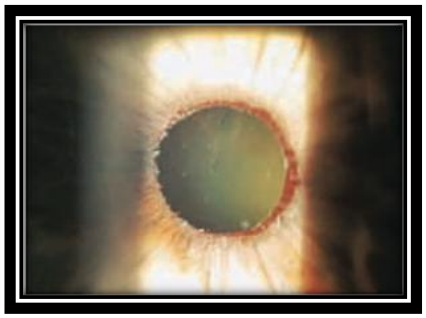
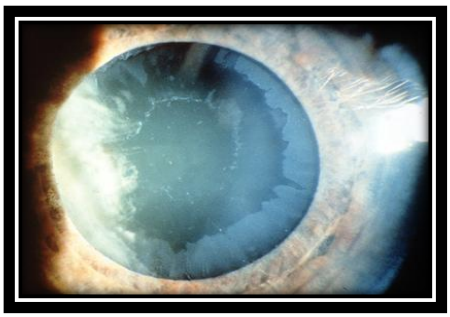

***Figure 1:*** ***Figure 2:*** ***Figure 3:***

***Figure 1: PXF material on the pupillary border.***
***Figure 2: PXF material on pupillary border and on the anterior capsule of the lens.***
***Figure 3 : PXF material on the anterior capsule of the lens- Three ring sign.***

## Observation and Results:

In present study 540 peoples of both gender of age 45 years and above were enrolled. Out of that 32 (5.93%) patients were positive for Pseudoexfoliation Syndrome.

**Table 1: Prevalence of Pseudoexfoliation Syndrome according to Overall, Gender and Age-Group:**

| Age-Group | | Total Number of Subjects | Prevalence of Pseudoexfoliation | |
|---|---|---|---|---|
| | | | No. | Percentage |
| Over all Prevalence | | 540 | 32 | 5.93% |
| Gender | Male | 253 | 21 | 9.05% |
| | Female | 287 | 11 | 3.98% |
| Age-Group | 45-50 | 164 | 00 | 00% |
| | 51-60 | 151 | 05 | 3.31% |
| | 61-70 | 173 | 20 | 11.56% |
| | 71-80 | 45 | 04 | 8.89% |
| | 81-90 | 07 | 03 | 4.28% |

**T**he prevalence of Pseudoexfoliation Syndrome found to be 5.92%. Out of 540 patients 21 (9.05%) males were found to have pseudoexfoliation as compared to 11 (3.98%) females. The prevalence of PXF is found to increase with age in this study. Maximum prevalence is 11.56% in 61- 70 years of age group. The youngest patient with pseudoexfoliation was 55 years old.

Out of these 32 positive for Pseudoexfoliation Syndrome patients residing in rural areas were 78.1% and those in urban areas were 21.9%.

Out of 32 patients, 53.1% patients had bilateral presentation of PXF, whereas 46.9% showed unilateral presentation.

Patients having PXF, outdoor occupation were 24(75%) and those working indoors were 04(25%).

**Table 2: Clinical features of the patients with pseudoexfoliation syndrome:**

| Clinical Features | Number (n= 32) | Percentage |
|---|---|---|
| Pseudoexfoliative material on anterior capsule of the lens | 24 | 75% |
| Flakes on iris margin | 16 | 50% |
| Poor pupil dilatation after putting mydriatic agent | 23 | 71.8% |
| Atrophic patches on the iris | 8 | 25% |
| Phacodonesis | 2 | 6.25% |

In the present study, it was observed that 75 % of the patients had pseudoexfoliative material on the anterior capsule of the lens. Typical three-ring pattern was noted on the anterior capsule of the lens. Presence of flakes on the iris margin was noted in 50% patients. Poor pupil dilatation after putting mydriatic agent was noted in 71.8% of patients. Atrophic patches on the iris were observed in 25% of the patients. Phacodonesis was noted in 6.25% of the cases.

**Table 3 : Visual Acuity&Intra Ocular Pressure, Characteristics of the lensin Right and Left eye:**

| | | Right Eye | | Left Eye | |
|---|---|---|---|---|---|
| | | No. [n=32] | Percentage | No. [n=32] | Percentage |
| Visual Acuity | VA > 6/60 | 17 | 53.1% | 11 | 34.3% |
| | VA 6/60 – 3/60 | 06 | 18.8% | 10 | 31.2 |
| | < 3/60 | 09 | 28.1% | 11 | 34.3% |
| Intra Ocular Pressure | Normal (10-21) | 31 | 96.9% | 31 | 96.9% |
| | Raised (>21) | 01 | 3.1% | 01 | 3.1% |
| Characteristics of the lens | Phakic | 25 | 78.1% | 23 | 71.8% |
| | Pseudophakic | 07 | 21.8% | 09 | 28.1% |
| | Aphakic | 00 | 00% | 00 | 00% |
| Position of Lens | Normal | 31 | 96.9 | 31 | 96.9 |
| | Subluxated Lens | 01 | 3.1 | 01 | 3.1 |

In the present study, visual acuity observed in the right eye showed that 17 (53.1%) patients had >6/60, 06 (18.8%) patients had 6/60-3/60 and 9 (28.1%) patients had <3/60. In the left eye, 11 (34.3%) patients >6/60, 10 (31.2%) patients had 6/60-3/60 and 13 (34.3%) patients had <3/60.

Out of 32 right as well as left eyes, 93.8% of the patients had normal IOP whereas only 6.2% of the patients had raised IOP above 21mm Hg.

Phakic lens was observed in 78.1% cases in the right eye and 71.8% patients in the left eye. Pseudophakia was noted in 21.8% and 28.1% whereas aphakia was not seen in any of the eyes.

96.9% patients had normal position of the lens and 3.1% had subluxated lens in the right and left eye, in two different patients.

## Discussion:

Pseudoexfoliation (PXF) syndrome is a daily challenge for ophthalmologists because of aggressive secondary glaucoma and cataract surgery complications caused by its presence. Although it has been known since the beginning of the 20th century, the interest for its research has been increasing during the last few decades.

This study included 540 patients of age 45 years and above, of either sex who came to the ophthalmology OPD of MGM Hospital & Medical College, Aurangabad [MS].

**Prevalence:** The PXF syndrome occurs worldwide although reported prevalence rates vary extensively. Several studies have been conducted in India. The prevalence of PXF based on hospital reports from India varies between 1.87% and 13.5% [10].

However, our study provides information from a region where data is scarce and varied from the data provided by previous studies. The prevalence of PXF in patients in our study was 5.92%.

The reported prevalence rate of PXF syndrome in different populations shows extensive variations in Eskimos [11], 1.6% in a south eastern US population,1.8% in the Framingham Eye Study [12], 7.5–25% in the Scandinavian countries. More recent population based estimates in Australia reveal prevalence of 0.98% in the Visual Impairment Project and 2.3% in the Blue Mountains Eye Study [13]. These could reflect true variations arising from racial, genetic, and/or geographical differences. A literature search, revealed two reports on the prevalence of PEX syndrome in India. The first, by Sood and Ratnaraj in 1968 [14], reported 1.87% prevalence in patients aged 45 years or above with a 34% prevalence of glaucoma in patients with PXF.

**Gender:** Out of 32 PXF patients, 21(9.05%) were males as compared to 11 females (3.98%). Thus more prevalence in males was noted.

Other studies have shown PXF to be significantly more prevalent in women than in men (Åstrom et al. 2007 [15]; Ekström et al, 1987 [16]; Hiller et al. 1982 [17]), while other studies show no gender difference Arvind et al. 2003 [18].

**Residence:** Patients residing in rural areas were 78.1% and those in urban areas were 21.9%. This study is comparable with the study conducted by H Arvind et al. (2003) [18] which also suggested rural predominance.

**Distribution of Age:** In this study, increasing age was associated with increase in prevalence of PXF. Although the reason for this age-related increase is unknown, it has been speculated that the changes in gene expression that occur with age may be responsible [19].

It was observed that the mean age in years of the patients with PXF was 68.28 ± 8.39. The prevalence is found to increase with age in this study. Maximum prevalence is 11.56% in 61- 70 years of age group. The youngest patient with pseudoexfoliation noted in this study was 55 years old. Present study is comparable with the studies conducted by P. A. Lamba et al. (1984) [20], Astrom et al. (2007) [15], which suggest that pseudoexfoliation is a disease of senility.

**Type of work/ occupation:**

In study showed increased prevalence of PXF in people exposed to outdoor activity. Majority of people in rural Maratawada depends on agriculture as source of income and thus would be exposed to outdoor activities. This supports the association between environmental factors (possibly solar radiation, UV exposure) and PXF as documented by study conducted by Taylor et al. (1980) [21].

**Visual Acuity:** In the present study, visual acuity observed in the right eye showed that 17 (53.1%) patients had >6/60, 06 (18.8%) patients had 6/60-3/60 and 9 (28.1%) patients had <3/60. In the left eye,11 (34.3%) patients >6/60.

The mean vision in both the eyes was 1/60 in the patients having PXF suggestive of poor visual acuity.

The study by Ravi et al. (2005) [22] observed that patients with PXF had lower visual acuity (VA) compared with patients without PEX. Similar data was reported in the Andhra Pradesh eye disease study, that found prevalence of blindness in eyes with PXF to be 15.1%

**Intra Ocular Pressure:** The present study observed that 96.9% of the patients had normal IOP whereas only 3.1% of the patients had raised IOP. This study is comparable to the study conducted by P. A. Lamba et al. (1984) [20] and H Arvind et al. (2003) [18] in which they found that 89% and 83.3% of the eyes with pseudoexfoliation had normal intra ocular pressure.

**Lens:** In the present study, Phakic lens was observed in 78.1% cases in the right eye and 71.8% cases in the left eye. Pseudophakia was noted in 21.8% and 28.1% whereas aphakia was not seen in any of the eyes.

**Clinical features of the patients with pseudoexfoliation syndrome:** In the present study, it was observed that 75 % of the patients had pseudoexfoliation material on the anterior capsule. Typical three-ring pattern was noted on the lens of the patients. 50% had presence of flakes on the iris margin. Iris abnormalities were observed in 25% of the patients in this study .Presence of flakes on the trabecular meshwork was seen in 37.5% of the patients and poor pupil dilatation was noted in 71.8% of patients.

## Conclusion:

In this present study, the prevalence of Pseudoexfoliation syndrome was 5.92%. Male predominance more as compared to female. The prevalence of PXF is found to increase with age. Majority of PXF Patients were rural residents. Increased prevalence of PXF was seen in patients exposed to outdoor activity.

Pseudoexfoliation syndrome may cause a spectrum of serious ocular and surgical complications. The problems related to cataract surgery are mainly initiated by zonular instability and, to some degree, by insufficient pupillary dilation. Thus awareness of the structural and functional features of this disorder may help avoid or minimize most of them. The early recognition of the syndrome has increased the percentage of favourable outcomes in operative procedures, through careful consideration with preoperative preparation, surgical awareness and postoperative follow-up.

## References;


1. *Naumann GO, Schlötzer-Schrehardt U, Küchle M: Pseudoexfoliation syndrome for the comprehensive ophthalmologist. Intraocular and systemic manifestations. Ophthalmology, 1998,105: 951-968.*
2. *Schlötzer-Schrehardt U, Naumann GO Ocular and systemic pseudoexfoliation syndrome. Am J Ophthalmol, 2006. 141: 921-937.*
3. *Summanen P, Tönjum AM: Exfoliation syndrome among Saudis. ActaOphthalmol Suppl,1988, 184: 107-111.*
4. *Bialasiewicz AA, Wali U, Shenoy R, Al-Saeidi R; Patients with secondary open-angle glaucoma in pseudoexfoliation (PEX) syndrome among a population with high prevalence of PEX. Clinical findings and morphological and surgical characteristics. Ophthalmologe,2005,102: 1064-1068.*
5. *Kozart DM, Yanoff M; Intraocular pressure status in 100 consecutive patients with exfoliation syndrome. Ophthalmology,1982, 89: 214-218.*
6. *Zenkel M, Pöschl E, von der Mark K, Hofmann-Rummelt C, Naumann GO, e al. Differential gene expression in pseudoexfoliation syndrome. Invest Ophthalmol Vis Sci,.2005,46: 3742-3752.*
7. *Schlötzer-Schrehardt UM, Koca MR, Naumann GO, Volkholz H Pseudoexfoliation syndrome. Ocular manifestation of a systemic disorder? Arch Ophthalmol, 1992. 110: 1752-1756.*
8. *Streeten BW, Li ZY, Wallace RN, Eagle RC Jr, Keshgegian AA :Pseudoexfoliative fibrillopathy in visceral organs of a patient with pseudoexfoliation syndrome. Arch Ophthalmol,1992,110: 1757-1762.*
9. *Shrum KR, Hattenhauer MG, Hodge D: Cardiovascular and cerebrovascular mortality associated with ocular pseudoexfoliation. Am J Ophthalmol,2000, 129: 83-86.*
10. *Thomas R, Paul P, Muliyil J. Glaucoma in India. J Glaucoma 2003;12:81-7.*
11. *Forsius H. Prevalence of pseudoexfoliation of the lens in Finns, Lapps, Icelanders, Eskimos and Russians. Trans OphthalmolSoc UK 1979;99:296.*
12. *Cashwell LF, Shields MB. Exfoliation syndrome: prevalence in a southeastern United States population. Arch Ophthalmol 1988;106 :335–36.*
13. *Mitchell P, Wang JJ, Hourihan F. The relationship between glaucoma and pseudoexfoliation: the Blue Mountains Eye Study. Archives of ophthalmology. 1999; 117(10): 1319-24.*
14. *Sood NN, Ratnaraj A. Pseudoexfoliation of the lens capsule. Orient Arch Ophthalmol 1968;6:62.*
15. *Astrom S, Stenlund H, Lindén C. Incidence and prevalence of pseudo-exfoliation syndrome and open-angle glaucoma in northern Sweden. Part I & II. Acta Ophthalmol Scand 2007; 85: 828–837.*
16. *Ekström C. Prevalence of pseudoexfoliations in a population 65-74 years of age. ActaOphthalmol 1987; 65( suppl 182): 9-10.*
17. *Hiller R, Sperduto RD, Krueger DE. Pseudo-exfoliation, intraocular-pressure, andsenile lens*

*changes in a population-based survey. Arch Ophthalmol 1982; 100: 1080-1082.*

18. *Arvind H, Raju P, Paul PG, Baskaran M, Ramesh SV, George RJ, McCarty C, VijayaL. Pseudoexfoliation in south India. Br J Ophthalmol 2003; 87: 1321-1323.*
19. *Karger RA, Jeng SM, Johnson DH, Hodge DO, Good MS. Estimated incidence of pseudoexfoliation syndrome and pseudoexfoliation glaucoma in Olmsted Country, Minnesota.J Glaucoma 2003;12:193-7.*
20. *P. A. Lamba, A. Giridhar..Pseudoexfoliation Syndrome, Indian J. of Ophthalmol, 1984, 32,3, 69- 173.*
21. *Taylor HR. The environment and the lens. Brit J Ophthalmol 1980; 64: 303-310.*
22. *Ravi Thomas et al. Pseudo exfoliation in southern India. IOVS. 2005; 46(4): 1170-1175.*

---

**Conflict of interest:** None declared
No source of funding.