Panacea Journal of Medical Sciences 2023;13(2):328–333

Content available at: https://www.ipinnovative.com/open-access-journals

Panacea Journal of Medical Sciences

Journal homepage: http://www.pjms.in/

Original Research Article

Study of ocular morbidities in elderly patients of North Karnataka

Pranesh Kulkarni[1], Shraddha Sudarshan[1,*], Praveen Kumar[1]

[1] *Dept. of Ophthalmology, Faculty of Medical Sciences in Khaja Banda Nawaz University, Kalaburgi, Karnataka, India*

ARTICLE INFO

Article history:
Received 22-02-2022
Accepted 14-05-2022
Available online 31-07-2023

Keywords:
Visual acuity
Ophthalmoscope
Slitlamp
Torchlight
Retinoscope
Schiotztonometer

ABSTRACT

Background: Ocular morbidities are quite common phenomenon in elderly patients due to lack of immunity and associated diseases like Diabetes mellitus, HTN which result into blindness. Ocular morbidities are also influenced by their location, habits and medical history. This study is attempted to study the pattern of ocular morbidity and to understand the risk factors responsible for visual impairment.
Materials and Methods: It is a hospital based cross sectional study where 300 patients > 60 years with ocular morbidities were studied. A visual acuity of <6/12 was taken as visual impairment and a visual acuity of <3/60 was taken as blindness. Snellen's chart, E Chart, retinoscopy, torchlight, slit lamp, Schiotztonometer, ophthalmoscope was used for examination and diagnosis. Tropicamide+phenylephrine ophthalmic solution was used for dilatation of pupil and lignocaine 4% for local anesthesia. Detailed history based on a structured questionnaire was taken followed by complete ocular examinations and relevant investigations to diagnose the ocular morbidities in the elderly.
Results: The highest ocular morbidity was cataract 34% followed by Refractive Error 30%, Blepharitis 16.3%, Dry eye 12.6% and pterygium, 8.5%. Majority of the blindness was due to cataracts 42.05%, followed by Glaucoma 12.5% and the third major cause was corneal ulcers 10.23%.Eyelid Abnormalities were seen in 1.4% in 60-75 years of age, 5.9% in 76-85, 47.4% in the age group of 86 years and above and p value was highly significant (p<0.00).
Corneal degenerations were found in 1.1 % in Urban and 14.5% in rural population and p value was highly significant (P<0.05), Refractive Error were 44.6% in Urban and 22.7% in rural and p value was highly significant (p<0.00). Based on the nature of occupation Dry Eye was 8.2% for indoor and 22.8% for outdoor and p value was highly significant. A significant relationship was established between diabetes and cataract with a p value of 0.00.
Conclusion: In the present study cataract was found to be the most common ocular morbidity among elderly patients (>60 years) followed by Refractive error, Blepharitis, dry eye and pterygium. Cataract was the major cause of blindness followed by glaucoma. This study will help ophthalmologists to treat such patients efficiently considering the factors influencing the ocular morbidities in the elderly and ensure early intervention to prevent blindness.

1. Introduction

Visual impairment is a major health problem among the elderly. Over 285 million people in the world are visually impaired of who 39 million are blind and 246 millionhave moderate to severe visual impairment.[1] In India it is reported that the prevalence of blindness (6/60 in the better eye) was 8.5%. This estimation varied from 4.2 to 13.7 % across different parts of the country. The prevalence of low vision was 22.85 % in elderly patients above sixty years of age. Cataract is responsible for 62.4% of bilateral blindness.

* *Corresponding author*.
E-mail address: shraddhasudarshan22@gmail.com (S. Sudarshan).

https://doi.org/10.18231/j.pjms.2023.063

Glaucoma and posterior segment pathologies were also important reasons for bilateral blindness.[2]

India has noticed an increasing Quantum of ocular morbidity, especially in the elderly year after year. The reasons could be probably due to the increasing population, higher longevity as well as unavailability of timely ophthalmic care.[3,4] Other reasons include negligence of elderly persons in the family, poverty, malnutrition, alcoholism, smoking, etc. The rising morbidity load of elderly people has thrown a great concern to the health care workers and requires primary eye care because this level of intervention enables the detection of the problem where they occur. Comorbidities like Diabetes Mellitus and hypertension also act as aggravating factors thatresultin blindness. Hence an attempt was done to evaluate the types of ocular morbidity in elderly people above sixty years and above so that the ocular morbidity can be correlated with certain age groups.

2. Material and Methods

300 hundred elderly patients of both sexes visiting the ophthalmology department of Khaja Banda Nawaz Hospital Kalaburgi-585102, Karnataka were studied.

2.1. Inclusive criteria

The patients above 60 years of age having ocular disease were selected for study.

2.2. Exclusion criteria

Patients who did not give their consent for the study, patients of dementia and mental derangements in whom the history was unreliable and the patients who did not comply with the process of thorough examination were excluded from the study.

2.3. Methods

A pre-designed proforma was administered to the patients, to collect their social and demographic data including their socioeconomic status, residence and the nature of their occupation. Detailed ocular examination included visual acuity and without pin hole which was done with the help of snellen's chart for literates and E chart for illiterate patients Radioscopy was done and auto-refractiometre was used to obtain corrected visual acuity and find the refractive error. A visual acuity of < 6/12 was taken as visual impairment. Clinical features examinations and investigations enabled the diagnosis ocular morbidity of the patients.

1. Examination of Conjunctivitis, sclera, cornea iris pupil, anterior chamber, lens posterior chamber and the posterior segment was done.
2. Examination of adnexa (Eyebrows eyelids, palpebral fissure extraocular movement and lacrimal sac) was done.
3. Anterior segment examination was done by using a slit lamp biomicroscope.
4. Test for dry-eye evaluation like Tear film Break up Time (TBUT), Schirmer's test I and II were done.
5. Gonioscopy was used to visualizethe anterior chamber while the posterior segment was examined by direct and indirect ophthalmoscope after pupillary dilation.
6. Goldman's applanation tonometer was used to measure intra ocular pressure.
7. Torchlight slit lap visual acuity chart, Schiotz tonometer,retinoscope auto-refract meter, direct and indirect ophthalmoscope were used in the process of examination.
8. Drugs used in the process of examination included tropicamide (0.8% w/v) + phenylephrine (5% w/v) ophthalmic solution for dilatation of the pupil and Lignocaine 4% eye drops for topical anesthesia was used as and when required.

The duration of the study was Dec-2019 to May-2021

2.4. Statistical analysis

Various clinical manifestations, causes, age groups of ocular morbidities were classified by percentage. The statistical analysis was performed in SPSS software.

3. Observation and Results

Table 1 Distribution of ocular Morbidities – 20.7 (34.5%) cataract, 180 (30%), 98 (16.3%) Blepharitis, 76 (12.6%) dry eye, 51 (8.50%) pterogium, 50 (8.3%) conjunctivitis, 49 (8.17%) pseudo-phakia, 39 (6.5%) glaucoma, 30 (5%) corneal degeneration, 28 (4.6%) Eyelid abnormalities, 25 (4.17%) diabetic retinopathy, 24 (4%) ARMD, 24 (4%) HTN retinopathy, 21 (55%) pinguecula, 13 (2.17%) lid swellings, 11 (1.8%) corned ulcer, 11 (1.8%) vitreous degeneration, 9 (1.5%) Dacryocystitis, 7 (1.17%) PCO, 6 (1%) Uveitis, 6 (1%) corneal opacity (keratoplasty), 4 (0.6%) retinal vascular occlusion, 3 (0.5%) macular scar/hole, 2 (0.3%) Aphokia, 2 (0.3%) Episcleritis.

Table 2 Study of degrees of visual impairment

1. Cataract 24 (3.23%) mild, 95 (15.8%) moderate, 51 (3.5%) severe, 37 (6.19%) Blindness
2. Refractive Error – 80 (15.3%) mild, 57 (9.5%) moderate, 35 (5.83%) severe, 6 (10.1%) Blindness
3. Corneal degeneration – 2 (0.33%) mild, 24 (4%) moderate, 2 (0.33%) severe, 1 (1.6%) Blindness
4. AMRD – 22 (3.66%) mild, 1 (0.16%) moderate
5. Glaucoma – 3 (0.5%) mild, 6 (1%) moderate, 14 (2.33%) severe, 11(1.83%) Blindness
6. Pseudophakia – 14 (2.3%) mild, 10 (1.66%) moderate, 5 (0.83%) severe, 4 (0.66%) Blindness

7. Diabetic Retinopathy – 13 (2.16%) mild, 6 (1%) moderate, 1 (0.16%) severe, 5 (0.83%) Blindness
8. HTN Retinopathy – 11 (1.83%) mild, 6 (1%) moderate, 6 (1%) severe
9. Corneal ulcer – 2 (0.33%) moderate, 9 (1.5%) Blindness
10. Pinguecula – 8 (1.33%) mild, 3 (0.5%) moderate, 6 (1%) severe, 1 (0.16%) Blindness
11. Vitreous degeneration – 4 (0.66%) mild, 7 (1.16%) moderate
12. Uveitis – 1 (0.16%) mild, 5 (0.83%) Blindness
13. Corneal opacity – 2 (0.33%) severe, 4 (0.66%) Blindness
14. PCO – 1 (0.16%) mild, 4 (0.66%) moderate, 1 (0.16%) severe, 1 (0.16%) Blindness
15. Retinal vascular occlusion – 2 (0.33%) mild, 1 (0.16%) moderate, 1 (0.16%) severe, 1 (0.16%) Blindness
16. Un-corrected Aphakia – 1 (0.16%) severe, 1 (0.16%) Blindness
17. Macular scar/hole – 1 (0.16%) mild, 1 (0.16%) moderate, 1 (0.16%) Blindness
18. Amblyopic– 1 (0.16%) severe, 1 (0.16%) Blindness
19. Episcleritis – 1 (0.16%) severe
20. Other – 1 (0.16%) mild, 2 (0.33%) moderate, 1 (0.16%) severe

Table 3 In the distribution of ocular morbidities by age. The eye lid abnormalities – 1.4 in 60-75 years of age, 5.9 in 75-85 years, 47.4 in > 85 years and p<0.00 (p value was highly significant) and remaining morbidities were insignificant when compared between 60-75, 76-85, 85 and above.

Majority of the blindness was due to cataract 42.05% followed by Glaucoma 12.5% and the third cause corneal ulcer 10.23%

4. Discussion

Present study of ocular morbidities in elderly patients of north Karnataka – cataract was highest ocular morbidity 34.5% followed by Refraction error (RE) 30%, Blepharitis 16.3%, dry eye 12.6% and 8.5% (Table 1). 6.16% blindness was noted due to cataract followed by 1.83% glaucoma, 1.5% corneal ulcer, and 1.1% RE (Table 2). In the study of Eye lid abnormalities 1.4 abnormal in 60.75 age group, 5.9 in 70-85 age groups, 47.4 in >86 age group and p<0.00(p< value was highly significant) (Table 3). These findings are more or less in agreement with previous studies.[5–7]

Cataract is high prevalence in present study caused by the degeneration and opacification of the lens fibres already formed formation of aberrant lens fibres or deposition of other material in their place. The loss of transparency occurs because of abnormalities of lens proteins and consequent disorganisation of lens fibres. Any factor physical or chemical which disturbs the critical intra and extra cellular equilibrium of water and electrolytes or deranges the colloid.[8,9]

The findings of the current studywere similar to the findings of various other studies. In most studies it was found that Cataract was the most prevalent Ocular morbidity. In studies by Baldev et al,[10] Lawrence et al,[11] Cataract has been the most prevalent ocular morbidities in relation to other morbidities. The prevalence rate ranged from 35% to 45%. In hospital-based studies the prevalence was less than 40% whereas in population-based studies it was above 40%.In a study by Priti Singh et al.[12] cataract was the second most common ocular morbidity with the prevalence rate of 37.4%. This prevalence rate has been very close to the present study. In studies like Aravind Eye Hospital Study, the prevalence was 41.7% which may be due to the fact that the study included only the rural population.[13] In a study by Taywade,[14] the prevalence was cataract was 36.3% and in a study by Jitendra Kumar et al[8] the prevalence of cataract was 41.1% which correlates with the current study.

Refractive Error was the second most prevalent ocular morbidity with 30%. However, most studies have recorded that refractive error as the topmost prevalent ocular morbidity. In studies by Sachdeva P,[15] refractive errors were found to be 62%, Taywade et al reported 85% prevalence,[14] M. M Singh 40.8%,[16] Priti sing reported 42.6%[12] and Lawrence et al[11] reported 20%. It is to be noted that in population-based studies Refractive Error was higher than in the hospital-based studies.

Blepharitis has been the third most common ocular morbidity brought out in the study. The prevalence of Blepharitis has been 16.33%. It is more prevalent in the Male patients and in the patients from rural patients. It is found that Blepharitis has a significant relationship with Location, Nature of Occupation, Socio Economic Status, Use of Chula, Smoking Habit, and Diabetes.

Dry Eye affected 12.67% of the patients. In a study by Priti Singh[12] the prevalence of dry eye was found to be 8.4% and in a study by Taywade[14]the prevalence was 12.7%. The present study has a good correlation to other studies with respect to prevalence of Dry Eye is concerned. Dry Eye is significantly associated with Location of the patients, Nature of Occupation, and Diabetes.

Pterygium is observed to be prevalent in 8.5% cases. In a study by SawumiMA,[17] the prevalence of Pterygium was 5.4% and a prevalence of 28% in study in Taiwan by Wen Li Wang,[18] Priti Singh et al,[12] reported a prevalence of 2.8%. The prevalence of Pterygium in this study is slightly higher than the studies done in India. This may be due to the influence of environmental factors and exposure to sunlight in outdoor workers.

Age Related Macular Degeneration (ARMD) has a prevalence of 4% in the current study. ARMD is reported at 6.6% by a study by Taywade,[14] and 2% by Priti Singh

Table 1: Pattern of ocular morbidities

Type of ocular morbidities	N (%)	Type of ocular Morbidity	N (%)
Cataract	207 (34.5)	Pinguecula	21 (3.5)
Refractive Error	180 (30.0)	Lid Swellings	13 (2.17)
Blepharitis	98 (16.33)	Corneal Ulcer	11 (1.83)
Dry Eye	76 (12.67)	Vitreous Degeneration	11 (1.83)
Pterygium	51 (8.50)	Dacryocystitis	9 (1.5)
Conjunctivitis	50 (8.33)	PCO	7 (1.17)
Pseudophakia	49 (8.17)	Uveitis	6 (1.00)
Glaucoma	39 (6.5)	Corneal Opacity / Keratoplasty	6 (10)
Corneal Degenerations	30 (5.0)	Retinal Vascular occlusions	4 (0.67)
Eyelid Abnormalities	28 (4.67)	Macular Scar/Hole	3 (0.50)
Diabetic Retinopathy	25 (4.17)	Others	3 (0.5)
ARMD	24 (4.0)	Aphakia	2 (0.33)
HTN Retinopathy	24 (4.0)	Episcleritis	2 (0.33)

ARMD = Age related Macular degeneration PCO = Posterior capsule opacification

Table 2: Distribution by causes of visual impairment

Type of ocular Morbidity	Mild visual impairment (N%)	Moderate visual impairment (N%)	severe visual impairment (N%)	Blindness (N%)
Cataract	23 (3.83)	95 (15.8)	51 (8.5)	37 (6.16)
Refractive Error	80 (13.3)	57 (9.5)	35 (5.83)	6 (0.17)
Corneal Degenerations	2 (0.33)	24 (4.0)	2 (0.33)	1 (0.16)
ARMD	22 (3.66)	1 (0.16)		
Glaucoma	3 (0.5)	6 (1.0)	14 (2.33)	11 (1.83)
Pseudophakia	14 (2.35)	10 (1.66)	5 (0.83)	4 (0.66)
Diabetic Retinopathy	13 (2.16)	6 (1)	1 (0.16)	5 (0.83)
Hypertensive Retinopathy	11 (1.83)	6 (1)	6 (1)	-
Corneal Ulcer	-	2 (0.33)	-	-
Pinguecula	8 (1.33)	3 (0.5)	6 (1)	1 (0.16)
Vitreous Degeneration	4 (0.660	7 (1.16)	-	-
Uveitis	-	1 (0.16)	-	5 (0.83)
Corneal Opacity/ keratoplasty	-	-	2 (0.33)	4 (0.66)
PCO	1 (0.16)	4 (0.66)	1 (0.16)	1 (0.16)
Retinal vascular occlusions	2 (0.33)	1 (0.160	-	1 (0.16)
Uncorrected Aphakia	-	-	1 (0.16)	1 (0.16)
Macular Scar/Hole	1 (0.16)	1 (0.16)	-	1 (0.16)
Amblyopia	-	-	1 (0.16)	1 (0.16)
Episcleritis	-	-	1 (0.16)	-
Others	1 (0.16)	2 (0.33)	1 (0.16)	-

et al.[12] Globally ARMD is considered to be one of the commonest problems among the elderly with a prevalence of 8.7% according to Wan Ling.[18]

Glaucoma is one of the most reported ocular morbidities and most studied among researchers. The present study reports a prevalence of 6.5%. This is much higher than the prevalence reported by Priti Singh et al,[12] which was 3.4%, Jitendra Kumar et al,[8] 3.7%, M M Singh[16] 3.1%, Taywade[14] reports 5.6%.

It is observed that out of the total number of eyes, a majority had moderate visual impairment followed by mild visual impairment. Blindness was present in 11.5%. According to the WHO[1] classification of Visual impairment taking into consideration the presenting visual acuity in the better eye, this study observed that majority of the patients (29.7%) had moderate visual impairment followed by 25.7% with mild visual impairment, 10.7% with severe visual impairment and 1.3% patients had blindness. This was in line with National Blindness and Visual Impairment

Table 3: Distribution of ocular morbidities by age

Ocular Morbidities	Age 60-75	Age 76-85	Age 86 and above	P value
Glaucoma	7	10.3	5.3	0.626
Cataract	44	41.2	42.1	0.907
Blepharitis	17.4	16.2	0	0.141
Uveitis	2.3	1.5	0	0.735
Aphakia	2.3	1.5	0	0.735
Conjunctivitis	8.5	14.7	5.3	0.252
Corneal Ulcer	3.8	2.9	5.3	0.885
Corneal Degenerations	6.1	5.9	5.3	0.988
Corneal Opacity / Keratoplasty	1.9	1.5	0	0.82
Lid Swellings	3.8	7.4	0	0.283
Dry Eye	14.6	11.8	0	0.184
Dacryocvstitis	1.9	4.4	10.5	0.079
ARMD	4.2	4.4	0	0.654
Pseudophakia	14.1	16.2	10.5	0.809
PCO	2.3	2.9	0	0.754
Pterygium	14.6	10.3	21.1	0.446
Eyelid Abnormalities	1.4	5.9	47.4	0.000*
Refractive Error	39	35.3	15.8	0.128
HTN Retinopathy	4.7	4.4	0	0.629
Diabetic Retinopathy	5.2	5.9	0	0.57
Vitreous Degeneration	0.9	1.5	5.3	0.288
Retinal Vascular Occlusions	2.3	0	0	0.354
Macular Scar/Hole	0.9	0	0	0.663
Other	1.4	0	0	0.539
Episcleritis	0.9	0	0	0.663
Pinguecula	7.5	5.9	0	0.434

ARMD = Age related Macular Degeneration PCO = Posterior Capsular Opacification, HRN = Hypertension Eyelid abnormalities had high prevalence in different age groups and p<0.000 (p value was highly significant)

Survey (2015-2019) which estimated the prevalence of Blindness to be 1.99%.

According to WHO[1] out of the 1 billion people with preventable or addressable visual impairment, 826 million had near vision impairment which amounts to 82.6%. In the current study, 81% of the patients had near vision impairment and the highest number of patients belonged to the N12-N18 group. Normal near vision of N6 was seen in 11% of the patients.

The study has also brought out that of the cataract was the major cause of blindness as compared to other ocular morbidities.

It is to be noted that refractive error correlated with mild to moderate visual impairment. It was prevalent more amongst male patients, urban location, higher in the age group of 60-75. This may be attributed to the fact that educated male patients living in urban areas recognize the visual impairment and seek medical care earlier. Patients who used Chula reported a higher incidence of refractive errors.

Apart from this, smoking, type-II DM, HTN also aggravate cataract, RE, Blepharitis, Dry Eye. Pterygium was mainly observed mainly in outdoor workers. Majority of ocular morbidities including cataract, blepharitis, corneal ulcer, corneal degeneration lid swelling dry eye are significantly associated with type-II DM patients.[19]

5. Conclusion

The present study of ocular morbidities in elderly patients included cataract, Refractive Error, Blepharitis, Dry eye and pterygium. These age-related morbidities require a nutritional diet, regular ophthalmologicalcheck-ups. These morbidities are aggravated by type-II DM, HTN, malnutrition and delayed ophthalmic care.

This study demands to create awareness among the elderly patients for regular ophthalmologic check-ups if any variation in the eyesight to prevent ocular morbidities, to prevent blindness.

6. Limitation of study –Study during Covid Pandemic

The study was conducted during the two waves of the pandemic. This disrupted the patient inflow to the hospital.

7. Ethical Approved

This research paper was approved by Ethical committee of Khaja Banda Nawaz University Faculty of Medical Sciences Kalaburgi-585102, Karnataka

8. Source of Funding

None.

9. Conflict of Interest

None.

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Author biography

Pranesh Kulkarni, Professor and Head

Shraddha Sudarshan, Post-Graduate Student

Praveen Kumar, Post-Graduate Student

Cite this article: Kulkarni P, Sudarshan S, Kumar P. Study of ocular morbidities in elderly patients of North Karnataka. *Panacea J Med Sci* 2023;13(2):328-333.