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# Ocular Morbidity Profile in Patients Attending Eye OPD of Dr. YSPGMC Nahan, HP

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**ABSTRACT**

The pattern of eye diseases vary in different parts of world and is influenced by racial, geographical, socioeconomic and cultural factors. Ocular morbidity is among the most under-reported public health problems in the developing world. There are several published studies describing the profile of ocular morbidities in rural areas across India and world wide with difference in prevalence region wise . However such studies on ocular morbidities in our Subhimalyan area are not there. The present study was undertaken to gather information on these ocular problems. The basic aim of this study was to assess the prevalence and pattern of of eye diseases including visual impairment in our Subhimalyan area and to recognize avoidable causes of ocular morbidity. In this study of Ocular morbidity profile Refractive error was found most common cause of ocular morbidity (37.55%) followed by cataract (35.56%), digital strain (4.94%), Ocular Surface Foreign Body (OSFB) (4.2%) and other ocular morbidities in this area. Increasing the awareness of people in the communities through health education regarding visual hygiene, digital strain, refractive error and early rehabilitation of cataract which will help in reducing ambylopia and reducing the burden of blindness/visual impairment. Timely steps taken for guiding and counseling the patients helps to treat the patient as well as to eliminate the avoidable blindness. Use of PEW, at workplaces will help to reduce the ocular morbidity. In this digital era the problems of dry eye and digital strain needs special emphasis. There is need to plan regular outreach screening and service camps.

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**Key Words**
Refractive error, cataract , OSFB, conjunctivitis and pterygium

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## INTRODUCTION

The pattern of eye diseases vary in different parts of the world and is influenced by racial, geographical, socioeconomic and cultural factors[1-5]. The common diseases worldwide are cataract, refractive errors, glaucoma, conjunctivitis, corneal ulcers, uveitis, trauma, retinal disorders and pterygium. Other diseases include trachoma, onchocerciasis, xerophthalmia, congenital malformations and ocular malignancies along with ocular pathology due to systemic diseases manifested as retinopathies e.g. diabetic and hypertensive retinopathy. Timely steps taken, guiding and counseling the patients regarding eye care helps to treat the patient as well as to eliminate the avoidable blindness which amounts to 80% of total blindness. The present study was designed with the aim is to determine the ocular morbidity profile (pattern of eye diseases) among patients attending Eye OPD of Dr.YSPGMC Nahan, HP and also to assess magnitude of avoidable blindness and visual impairment (VI) in this sub Himalayan area.

**Aims and objectives:**

- To assess the pattern of various ocular diseases in patients attending Eye OPD
- To assess the magnitude of avoidable blindness and visual impairment in this sub Himalayan region
- Early detection and correction of refractive error in children for prevention of amblyopia

## MATERIALS AND METHODS

This is a prospective nonrandomized cross sectional study conducted over a period of three months November 2022 to January 2023, after getting approval from ethical committee ,to evaluate the pattern of ocular morbidity and to assess the magnitude of blindness as per WHO parameters and impaired among patients attending eye OPD Dr. YS Parmar Govt. Medical College Nahan, HP, India

**Exclusion criteria:** People attending eye OPD for disability certificate and for other medical certificates.

**Inclusion criteria:**

All patients attending to OPD having some kind of visual and non visual symptoms related to eye and referred patients from other departments for evaluation of headache and various retinopathies like hypertensive and diabetic retinopathy etc., after taking valid informed consent Blind patients selected according to WHO international classification and criteria of blindness[3] (vision <3/60 in better eye with best corrected visual acuity adapted from international statistical classification of diseases and related health problem, tenth revision Geneva WHO,1992), of all age group and sex, religion, mother tongue, occupation. Those having best corrected visual acuity < 3/60 were labeled as blind and those having best corrected visual acuity <6/18-3/60 labeled as visual impairment[6]. Careful history taken from all patients regarding blindness in family if any, psychological reaction to blindness, age of onset of blindness, history regarding consultation taken from qualified doctor or not, Dietary habits, Hrs of daily exposure to sunlight, occupation, socioeconomic status, history of smoking and alcohol intake taken. Visual acuity assessment done including pinhole examination, Color vision assessed on Ishiara's Chart, Refractive error assessed by wet cycloplegic retinoscopic refraction with correction of refractive error. Detailed examination of conducted aided with Slit lamp examination, along with Intraocular pressure and Fundus examination. The patients not improving after correction of refractive error, having no organic lesion in presence of normal fundus examination were labeled as amblyopic. Socioeconomic status assessed as per Modified Kuppuswamy Classification of Socio Economic Class scale Stastistical analysis was done using the chi-square method.

## RESULTS

The total number of new patients seen during the study period was 1659. There were 868 (52.32%) males and 791 (47.67%) females giving a male to female ratio of about 1:1. The age range of the patients was 7 days to 91 years. 152 (9.16%) of the patients were below 20 years of age, 833(50.21%) were aged below and 826 (49.79%)were above 50 years. The commonest ocular morbidity found was refractive error in 623 (37.55%) patients followed cataract in 590 (35.56%). Digital strain seen in 82 (4.94%). The other diseases seen were glaucoma, ocular surface foreign bodies (OSFB) 70 (4.2%) patients and 95.71% in males, Infective conjunctivitis in 33 (1.98%) followed by allergic conjunctivitis including vernal keratoconjunctivitis seen in 23 (1.38%) patients . Pterygium was present in 52 (3.13%) patients. Retinal disease was present in 12 (0.72%) patients including age related macular degeneration. Retinopathy was seen in 27 (1.72%) patients . The other diseases seen were corneal ulcer, pseudophakia/aphakia, strabismus, dacryocystitits, orbital diseases and lid related diseases stye and Chalazion being commonest. No new case presented with uveitis during this period however old uveitis patients on treatment were there. Ambylopia seen in 21 patients. Out of 590 cataract patients screened 416 patients were from more than 50 kilometers from remote villages.

Above stastical analysis clearly shows that dry eye, lid related diseases and digital strain are more seen in male patients and pterygium is significant in female patients. The above analysis shows that in patients above 50 years cataract,

glaucoma, retinopathies, dacryocystitis and retinal diseases significantly more present than in patients less than 50 years of age. Whereas in patients less than 50 years of age conjunctivitis, digital strain, pterygium, lid related diseases and OSFB significantly more present. The above data table clearly shows that ocular morbidity is high in lower socioeconomic status.

## DISCUSSIONS

Cataract and refractive errors remains the leading causes of visual impairment in all regions of the world, except in the most developed countries. Edema OT, Okojie OH in their study, Pattern of eye diseases in Benin City, Nigeria. of a total of 1973 subjects were 1111 (56.3%) females and 862 (43.7%) males giving a ratio of 1.3:1. The most common causes of ocular morbidity were refractive error (31.6%), glaucoma (23.5%), presbyopia (17%) and cataract (12.5%). Refractive error, glaucoma and cataract were significantly associated with age and sex while presbyopia was only positively associated age. They concluded that considering the causes of ocular morbidity noted in this study, there is an urgent need to establish primary eye care services in these remote and rural areas in order to achieve the vision 2020 goal of eliminating avoidable blindness[1].

B Thylefors *et al*.[7] reported that the main causes of blindness and low vision are cataract, trachoma, glaucoma, onchocerciasis and xerophthalmia; however, insufficient data on blindness from causes such as diabetic retinopathy and age-related macular degeneration preclude specific estimations of their global prevalence. Sharma *et al*.[8] in their study "Demographic Profile of Blindness in Patients attending Tertiary Eye Care Centre in Central India" observed that incidence of blindness was 1.38%. Male and female ratio was 1.1:1. Incidence of blindness increases with age. Large number of patients is having preventable or treatable cause of blindness. Incidence of blindness was more in rural areas and in low socioeconomic population. Blindness was more common in illiterate and less educated population and had a significant relative risk (1.5) for development of blindness as compare to educated group[8].

Agyemang in his study "Pattern of ocular conditions among patients attending eye clinic in Ghana" found that conjunctivitis, cataract, glaucoma and refractive errors were the major ocular conditions among patients attending eye clinic. The commonest eye disorder encountered was conjunctivitis (39.70%). This was followed by cataract (24.40%), glaucoma (9.70%) and refractive errors (8.90%). 96.72% of cases of cataract and 85.57% of cases of glaucoma occurred in those above 40 years. Of those with refractive error, there were 40.45% with myopia, 34.83% with astigmatism and 24.72% with hyperopia. Conjunctivitis and cataract were significantly higher in females with p-values of 0.008 and 0.000 respectively using the chi-square test. However, there was no significant difference in the prevalence of glaucoma and refractive errors between males and females with p-values of 0.189 and 0.255 respectively. Presbyopia was significantly higher in males with p-values of 0.017[9].

Akinsola *et al*.[10] in a study of the pattern of eye diseases in adults aged 16 years and above found in their study There were 1111 (56.3%) females and 862 (43.7%) males giving a ratio of 1.3:1. The most common causes of ocular morbidity were refractive error (31.6%), glaucoma (23.5%), presbyopia (17%), and cataract (12.5%). Refractive error, glaucoma, and cataract were significantly associated with age and sex while presbyopia was only positively associated age. Ogwurike from northern Nigeria reported that cataract and anterior segment diseases were the commonest type of eye diseases . Onchocerciasis and trachoma were also common their study.

Thulasiraj *et al*.[11] in their study , Blindness and vision impairment in a rural south Indian observed that age-related cataract was the most common potentially reversible blinding disorder (72.0%) among

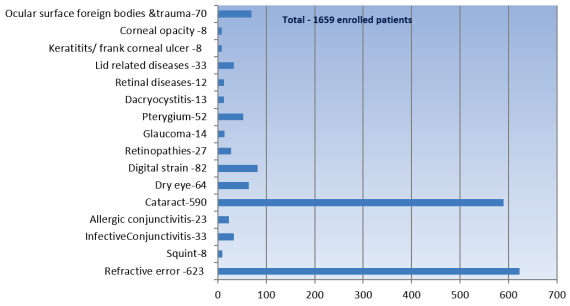


Fig. 1: showing total no of patients of various morbidity types

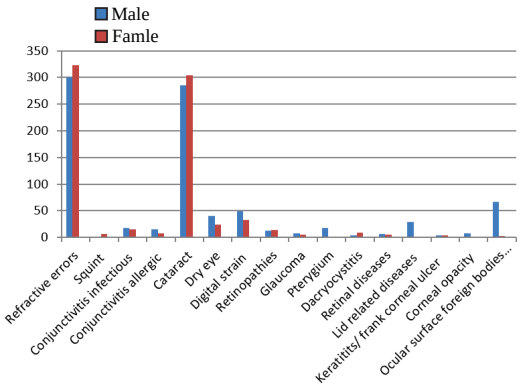


Fig. 2: showing ocular morbidity Gender wise

Table 1: showing the distribution of ocular morbidities Total age and gender wise

| Ocular morbidity | Age in years | | | | | | | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UP TO 10 | | 11-20 | | 21-30 | | 31-40 | | 41-50 | | 51-60 | | 61-70 | | 71-80 | | >80 | | |
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | |
| Refractive errors | 9 | 0 | 33 | 45 | 43 | 30 | 36 | 30 | 87 | 109 | 70 | 79 | 22 | 30 | - | - | - | - | 623 |
| Squint(new cases) | - | 3 | - | 4 | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | 9 |
| Conjunctivitis infectious | - | | 3 | 4 | 6 | 4 | 5 | 3 | 2 | 0 | 2 | 4 | - | - | - | | - | - | 33 |
| Conjunctivitis allergic | - | 2 | 12 | 4 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | 23 |
| Cataract | - | 2 | - | - | - | - | 3 | - | 26 | 40 | 124 | 113 | 79 | 110 | 42 | 35 | 12 | 4 | 590 |
| Dry eye | | | | | 14 | 8 | 12 | 7 | 11 | 5 | 3 | 4 | - | | - | | - | | 64 |
| Digital strain | | | 10 | 6 | 21 | 11 | 14 | 8 | 4 | 8 | - | | - | | - | | - | | 82 |
| Retinopathies | - | - | - | - | - | - | - | - | - | - | 4 | 2 | - | 7 | 5 | 5 | 4 | - | 27 |
| Glaucoma | 2 | 1 | 5 | 4 | 1 | 1 | | | 14 | | | | | | | | | | |
| Pterygium | | | | | 2 | 10 | 4 | 10 | 7 | 9 | 4 | 5 | 1 | - | - | - | - | - | 52 |
| Dacryocystitis | 3 | 2 | - | - | - | - | - | - | - | - | 1 | 4 | - | 3 | - | - | - | - | 13 |
| Retinal diseases | - | - | - | - | - | - | - | - | - | - | 3 | - | 3 | 2 | 1 | 3 | - | - | 12 |
| Lid related diseases | | | 7 | | 5 | | | | 10 | | 4 | - | 3 | - | - | 2 | - | - | 31 |
| Keratitits/frank corneal ulcer | - | - | - | - | - | - | - | - | 4 | 2 | - | - | - | 2 | - | - | - | - | 8 |
| Corneal opacity | - | - | - | - | - | - | 2 | - | - | - | 3 | - | 3 | - | - | - | - | - | 8 |
| Ocular surface foreign bodies trauma | - | - | - | 3 | 32 | | 26 | - | 6 | - | 3 | - | - | - | - | - | - | - | 70 |
| Total | 12 | 9 | 65 | 66 | 126 | 65 | 102 | 58 | 157 | 173 | 225 | 212 | 116 | 158 | 49 | 46 | 16 | 4 | 1659 |

Total =1659 Male=868, Female = 791 Below 50 years = 833, Above 50 years = 826

Table 2: showing the distribution of ocular morbidities Total and Gender wise

| Ocular morbidity | Total | Male | Female | p-value | Statistical significance |
|---|---|---|---|---|---|
| Refractive errors | 623 (37.55%) | 300 (48.15%) | 323 (51.85%) | 0.116 | Not Significant |
| Squint | 9 (0.54%) | 2 (22.22%) | 7 (77.78%) | 0.324 | Not Significant |
| Conjunctivitis infectious | 33 (1.98%) | 18 (54.54%) | 15 (45.46%) | 0.570 | Not Significant |
| Conjunctivitis allergic | 23 (1.38%) | 15 (65.21%) | 8 (34.78%) | 0.095 | Not Significant |
| Cataract | 590 (35.56%) | 286 (48.47%) | 304 (51.53%) | 0.498 | Not Significant |
| Dry eye | 64 (3.85%) | 40 (62.5%) | 24 (37.5%) | 0.015 | Significant |
| Digital strain | 82 (4.94%) | 49 (59.75%) | 33 (40.25%) | 0.024 | Significant |
| Retinopathies | 27 (1.62%) | 13 (48.15%) | 14 (51.85%) | 0.99 | Not Significant |
| Glaucoma | 14 (0.84%) | 8 (57.15%) | 6 (42.85%) | 0.495 | Not Significant |
| Pterygium | 52 (3.13%) | 18 (34.61%) | 34 (65.39%) | 0.041 | Significant |
| Dacryocystitis | 13 (0.78%) | 4 (30.76%) | 9 (69.24%) | 0.204 | Not Significant |
| Retinal diseases | 12 (0.72%) | 7 (58.34%) | 5 (41.66%) | 0.479 | Not Significant |
| Lid related diseases | 31 (1.86%) | 29 (93.55%) | 2 (6.45%) (2.11E-07) | 0.00000021 | HighlySignificant |
| Keratitits/ frank corneal ulcer | 8 (0.48%) | 4 (50%) | 4 (50%) | 0.416 | Not Significant |
| Corneal opacity | 8(0.48%) | 8 (100%) | 0 (0%) | 0.003 | Significant |
| OSFB and trauma | 70 (4.2%) | 67 (95.71%) | 3 (4.28%) | 0.0000000028 (2.84E-17) | Highly Significant |

Table 3: showing the distribution of ocular morbidities on basis age less and above 50 years

| Ocular morbidity | In patients <50 yrs N = 833 | In patients >50 yrs N = 826 | p-value | Statistical significance |
|---|---|---|---|---|
| Refractive errors | 422 | 201 | 1.73E-28 | Highly Significant |
| Squint | 7 | 2 | 0.097 | Not Significant |
| Conjunctivitis infectious | 27 | 6 | 0.0024 | Significant |
| Conjunctivitis allergic | 23 | 0 | 1.52E-06 | Highly Significant |
| Cataract | 71 | 519 | 4.170E-118 | Highly Significant |
| Dry eye | 57 | 7 | 2.300E-10 | Highly Significant |
| Digital strain | 82 | 0 | 2.271E-20 | Highly Significant |
| Retinopathies | 0 | 27 | 1.431E-07 | Significant |
| Glaucoma | 0 | 14 | 0.00016 | Significant |
| Pterygium | 42 | 10 | 1.53E-06 | Significant |
| Dacryocystitis | 5 | 8 | 0.394 | Not Significant |
| Retinal diseases | 0 | 12 | 0.0004 | Significant |
| Lid related diseases | 22 | 9 | 0.019 | Significant |
| Keratitits/ frank corneal ulcer | 6 | 2 | 0.159 | Not Significant |
| Corneal opacity | 2 | 6 | 0.152 | Not Significant |
| Ocular surface foreign bodies &trauma | 67 | 3 | 7.244e-15 | Highly Significant |

eyes presenting with blindness. Blindness and vision impairment remain major public health problems in India that need to be addressed and cataracts and refractive errors remain the major reversible causes for the burden of vision impairment in this rural population.

Xu Wang *et al*.[12] in their study found Study that the most frequent cause of low vision/blindness was cataract (36.7-38.5%), followed by degenerative myopia (32.7-7.7%), glaucoma (14.3%/7.7%), corneal opacity (6.1-15.4%), and other optic nerve damage (2.0-7.7%). Age-related macular degeneration (AMD) (2.0-7.7%) and diabetic retinopathy (0%/7.7%) were responsible for a minority of cases. In subjects 40-49 years old, the most frequent cause of low vision and blindness was degenerative myopia. In the 50-to 59-year age group, the most frequent cause was cataract, followed by degenerative myopia. In the 60-to 69-year-old subjects and the >or = 70-year group, the most frequent cause of low vision and blindness was cataract, followed by degenerative myopia and glaucoma.

Resnikoff S, Pascolini D, Etya'ale D, Kocur I, Pararajasegaram R, Pokharel GP, *et al*.[13] in the year 2002 presented Global data on visual impairment. And conveyed that cataract remains the leading cause of

Table 4: showing the distribution of ocular morbidities on basis of socioeconomic statuses

| Ocular morbidity | Upper (n = 12) | Upper middle (n = 758) | Lower middle (n = 889) | Lower (n = 202) | p-value | Statistical significance |
|---|---|---|---|---|---|---|
| Refractive errors | 4 | 196 | 334 | 89 | P = 5.5716E-08 P<0.05 | Highly Significant |
| Conjunctivitis infectious | 0 | 7 | 8 | 18 | P = 2.598E-14 P<0.05 | Highly Significant |
| Conjunctivitis allergic | 1 | 9 | 8 | 5 | 0.03 | Significant |
| Cataract | 2 | 216 | 296 | 86 | 0.0008 | Significant |
| Dry eye | 2 | 23 | 38 | 11 | 0.04 | Significant |
| Digital strain | 3 | 36 | 42 | 2 | 1.157E-05 | Highly Significant |
| Retinopathies | 1 | 9 | 13 | 4 | 0.191 | Not Significant |
| Glaucoma | 1 | 3 | 7 | 3 | 0.007 | Significant |
| Pterygium | 0 | 14 | 29 | 9 | 0.13 | Not Significant |
| Dacryocystitis | 0 | 1 | 8 | 4 | 0.03 | Significant |
| Retinal diseases | 0 | 0 | 9 | 3 | 0.02 | Significant |
| Lid related diseases | 0 | 4 | 22 | 5 | 0.014 | Significant |
| Keratitits/ frank corneal ulcer | 0 | 1 | 5 | 2 | 0.324 | Not Significant |
| Corneal opacity | 0 | 2 | 2 | 4 | 0.005 | Significant |
| Ocular surface foreign bodies and trauma | 0 | 5 | 47 | 18 | 6.146E-09 | Highly Significant |

visual impairment in all regions of the world,except in the most developed countries. Other major causes of visual impairment are, in order of importance, glaucoma, age-related macular degeneration, diabetic retinopathy and trachoma. Refractive error, conjunctivitis and cataract which were the most common eye diseases in this study have been reported to be the most common eye diseases in various studies[1,3,9,10]. Khanna RC, Marmamula S et al concluded that looking at the causes of blindness, cataract was the primary cause of blindness in both APEDS (61.4%) and RACSS (72.8%) in rural areas of india[14] Uncorrected refractive error which was the commonest cause of ocular morbidity in our study, has been reported as the commonest cause of ocular morbidity in many studies in india also and worldwide[1,6]. It was the commonest cause of mild and moderate visual impairment in the Nigerian national blindness and visual impairment survey accounting for 77.9% and 57.1% respectively[11] Uncorrected refractive error is responsible for an estimated 18% (8 million people) of global blindness[9,10] Also uncorrected refractive error, followed by cataractas similar to our study, followed by glaucoma and corneal disease was a major cause of blindness and visual impairment in an urban West African population in the Tema eye survey[16]

Cataract is the most important cause of blindness world wide and reducing the burden of blindness from cataract is one of the priorities of Vision 2020, thus implementation of the recommendations and strategies of Vision 2020 will help. Blindness from glaucoma can be reduced by putting in place screening programmes for people age 40 years and above. Jose *et al*.[19] concluded that Age, sex, residence, literacy and working status were associated with blindness. The highest risk was among those aged 70+ and the illiterate. Cataract was responsible for 62.4% of bilateral blindness. Cataract was the second commonest cause of ocular morbidity accounting for 35.56%) of all cases in our study .

Murthy *et al*.[17] reported in study of ocular morbidity among elderly population in a rural area of central India that there was a high prevalence of refractive errors (40.8%), cataract (40.4%), aphakia (11.1%) followed by pterygium (5.2%), glaucoma (3.1%) and corneal opacities (3%). Prevalence of diseases of the lens and iris increased significantly with increasing age (p<0.001). There is a need to evolve strategies for reducing the burden of ocular diseases and improve geriatric eye health under the existing infrastructure of health care delivery in our country. our study has similar findings.

Sahoo *et al*.[18] reported that the common ocular morbidities among paediatric patients reported were refractive error (34%), ocular infection (13.5%), ocular trauma (9.9%), allergic conjunctivitis (9.2%). Refractive error was more prevalent in children of aged 11-14 years and ocular trauma in 5-9 years compared to children of the other age group. They concluded that majority of ocular morbidities are preventable and treatable. So early attention through eye screening and intervention programme at the community level is recommended.

Cacodcar *et al*.[19] found Refractive errors in majority of their study participants; followed by cataract, glaucoma, corneal opacities and others and concluded that a high percentage of patients with cataract and corneal opacities were probably due to low socio-economic background, illiteracy leading to a lack of awareness about common ocular problems and their treatable nature.

Allergic conjunctivitis and pterygium were the most common conjunctival diseases seen in this study and this is similar to earlier reports from southern Nigeria[1,7,10]. Vernal conjunctivitis was the commonest type of allergic conjunctivitis seen in this study. The prevalence of ocular morbidity was 29.35% (28.65% urban, 30.05% rural). Refractive error (17.36%) was the major cause of ocular morbidity followed by convergence insufficiency (2.79%), blepharitis (2.11%), Vitamin A deficiency (2.09%), allergic conjunctivitis

(1.92%), bacterial conjunctivitis (0.95%), amblyopia (0.41%), stye (0.31%) and squint (0.27%). There was an increase in ocular morbidity with age, especially in refractive error and convergence insufficiency. They concluded that most of this morbidity is either preventable or treatable, school screening forms an effective method to reduce this load[20].

Trauma including OSFB, which was responsible for 4.9% of eye diseases in this study is an important cause of blindness. Trauma is often the most important cause of unilateral loss of vision in developing countries and 5% of all bilateral blindness is a direct result of trauma. The common causes of ocular morbidity in our this study were refractive errors, cataract, allergic conjunctivitis OSFB and digital strain. In our area cataract patient come from very far difficult areas and they report mostly when the cataract is fully mature or hypermature where danger of cataract related complications always there. In a present era of mobile use and online studies there is increased number of patients coming with digital strain. In our study we found digital strain in 82 (4.94%) patients which is significantly high. Increased number of OSFB is due to non use of protective eyewear(PEW). The incidence of ocular morbidity in low income group was significantly more in this study than other groups as per modified the Kuppuswamy socioeconomic scale[21] which needs to taken care on priority basis.

## CONCLUSIONS

One of the priorities of Vision 2020 is to reduce the number of people with uncorrected refractive error and to reduce backlog of cataract blindness world wide. There is a need to provide good refraction services, low cost and good quality frames and operative facility to patients. In this digital era the problems of dry eye and digital strain needs special emphasis. Increasing the awareness of people in the communities through health education, regarding visual hygiene, digital strain, correction of refractive error and early rehabilitation of cataract will help in reducing amblyopia and burden of blindness/ visual impairment. Use of protective eye wears( PEW) at workplaces will help to reduce the ocular morbidity. Since in this area patients are coming from very far areas, regular outreach screening and service camps to be planned.

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