

## Pattern of ocular morbidity in a rural community in India

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### Abstract

**Background and objectives:** Many conditions can affect eye health, and even those that do not cause vision impairment can produce pronounced morbidity. In this study, we have investigated the pattern of eye diseases at an eye out patient department (OPD) in a rural set up.

**Materials and methods:** Eye OPD runs fortnightly at Rural Health Training Centre of Department of Community Medicine, JNMCH, AMU, Aligarh, India. Record from clinic register and patient files from the year 2016 to 2022 was accessed. Data was entered in SPSS version 20.0 software and analysed.

**Results:** A total of 694 patients were enrolled in the study. Common ocular morbidities were refractive error (29.5%), presbyopia (21.6%), cataract (16.9%), pterygium (10.2%), conjunctivitis (8.9%) and corneal conditions (4.3%). Prevalence of refractive error was almost same in both male (30.6%) and female (33.1%). Presbyopia was significantly ( $p<0.05$ ) higher in female (27.2%) compared to male (18.4%) patients while conjunctivitis was significantly ( $p<0.05$ ) higher among males (15.3% vs. 6.1%). Refractive error and conjunctivitis were significantly ( $p<0.01$ ) higher among patients aged less than 40 years while presbyopia, cataract and corneal conditions were significantly ( $p<0.05$ ) higher among patients aged 40 years and above.

**Conclusion:** A good proportion of patients with unoperated cataract reflect lack of accessible and affordable cataract operation services in rural areas. Findings of the study could be used to strengthen eye care services in rural areas.

### Introduction

The clinical as well as epidemiological profile of eye conditions varies in different parts of the world and is influenced by various factors like geographical, climatic, ethnic, socioeconomic and cultural factors [11]. The term ocular morbidity includes conditions both visual impairment and nonvisual ocular pathology [2]. World Health Organization (WHO) in its report in August, 2023 published that globally at least 2.2 billion people have a distance or near vision impairment. In at least almost in half of these

cases, vision loss could have been prevented or has not been addressed yet [3].

Among these one billion people, the major morbidity causing distance visual impairment is cataract which is followed by refractive error, age-related macular degeneration (ARMD), glaucoma, and diabetic retinopathy [4]. The main condition leading to near vision impairment is presbyopia [5].

Ninety percent of the visually impaired population lives in low and middle-income countries (LMICs)

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such as India. India's National Program for Prevention and Control of Blindness and Visual Impairment (NPCBVI) has been highly successful in reducing the prevalence of blindness from 1.4% in 1976 to 0.36% in 2019 in all age groups. However, urban-rural disparity exists with blindness (in people aged >50 years) being more common in rural areas compared to urban areas (2.14% vs. 1.80%) [6].

The ocular morbidities result in a decreased ability to perform activities of daily life, and should be investigated accordingly. In this study, we investigated the epidemiological profile and ocular morbid conditions (including nonvisual conditions) of patients attending eye clinic in a rural area. The findings of this study would help us understand pattern of ocular problems in rural set up which in turn shall be useful in effective planning and delivery of eye care services.

#### Material and methods

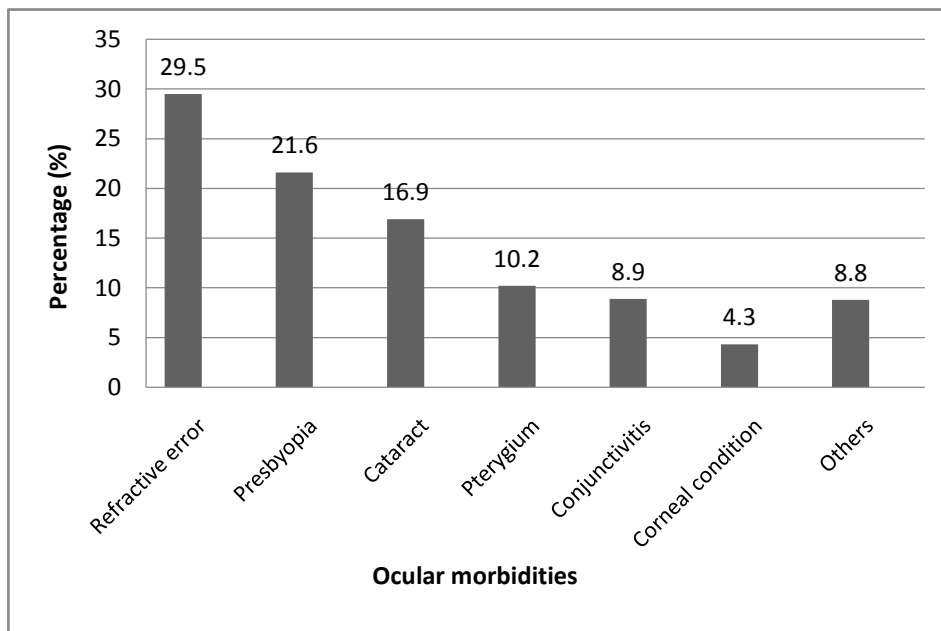
The study was conducted on patients attending the eye clinic at Rural Health Training (RHTC) Centre of Jawaharlal Nehru Medical College located in Jawan

block of Aligarh district, UP, India. The RHTC covers registered population of 6 villages namely Jawan, Sumera, Garhiya Bhojpur, Chhota Jawan, Jawan Sikandarpur and Tejpur. Eye clinics run outpatient departments (OPD) fortnightly at the centres. Secondary data was accessed and collected from clinic registers and patient files from the year 2016 to 2022. Data on patient included age, gender, clinical history and diagnosis. Meticulous extraction of information was done by a team of two members including an ophthalmologist.

Data was entered in IBM SPSS version 20.0 software and appropriate statistical tests were applied to analyze the data.

#### Results

A total of 1222 new patients presented at the eye out patient department (OPD) during the study period. Out of 1222 OPD patients, 694 (56.8%) were enrolled in this study. Prevalence of ocular diseases among the 694 patients is shown in Figure-1. Common ocular morbidities were refractive error (203, 29.5%), presbyopia (150, 21.6%), cataract (117, 16.9%), pterygium (71, 10.2%), conjunctivitis (62, 8.9%), corneal condition (30, 4.3%), and others (62, 8.8%).



**Figure-1:** Pattern of ocular morbidities in study population

**Table-1:** Ocular morbidities according to gender (n=633)

Gender	Number	Diagnosis n (%)					
		Refractive error	Presbyopia	Cataract	Conjunctivitis	Pterygium	Corneal conditions
Male	255	78 (30.6)	47 (18.4)	50 (19.6)	39 (15.3)	25 (9.8)	16 (6.3)
Female	378	125 (33.1)	103 (27.2)	67 (17.7)	23 (6.1)	46 (12.2)	14 (3.7)
p value*		>0.05	<0.05	>0.05	<0.05	>0.05	>0.05

Note: \*P value calculated by Chi square test;

**Table-2:** Pattern of ocular morbidities in study patients below and above 40 years of age (n=633)

Age group	Number	Diagnosis n (%)					
		Refractive Error	Presbyopia	Cataract	Conjunctivitis	Pterygium	Corneal Conditions
< 40 years	226	118 (52.2)	29 (12.8)	3 (1.3)	46 (20.4)	26 (11.5)	4 (1.8)
≥ 40 years	407	85 (20.8)	121 (29.7)	114 (28)	16 (4)	45 (11.1)	26 (6.4)
p value*		< .001	< .001	< .001	< .001	>0.05	<0.05

\*P value calculated by Chi square test

10.2%), conjunctivitis (62, 8.9%) and corneal conditions (30, 4.3%). These conditions altogether accounted for 633 (91.2%) patients. Remaining 61 cases (8.8%) had glaucoma, strabismus, lid pathologies and diabetic retinopathy. Of the total 62 conjunctivitis patients, 36 (58.06%) had allergic conjunctivitis and most of them presented during spring and summer months. Distribution of ocular morbidities among 633 cases according to gender is shown in Table-1. Refractive error was common in both male (30.6%) and female (33.1%). Presbyopia was significantly ( $p<0.05$ ) higher in female (27.2%) compared to male (18.4%) patients while conjunctivitis was significantly ( $p<0.05$ ) higher among males (15.3% vs. 6.1%). Table-2 shows the distribution of ocular morbidities in patients below and above 40 years of age. Refractive error (52.2%) and conjunctivitis (20.4%) were significantly ( $p<0.01$ ) higher among people aged less than 40 years while presbyopia (29.7%), cataract (28%) and corneal conditions were significantly ( $p<0.05$ ) higher among people aged 40 years and above.

## Discussion

Our study had higher female patients compared to males. Studies from India and other countries also had similar observation [7-9]. In our study, majority of patients were aged above 40 years. This could be due the fact that presbyopia (near vision difficulty) and cataract were common ocular morbidity that begin over 40 years of age [10,11]. With regards to ocular morbidity pattern in our study, refractive error was the commonest, followed by presbyopia, cataract, pterygium and conjunctivitis. Similar pattern was reported in study from Nepal by Rizyal *et al* [12] and in northern India by Haq *et al* [13]. However, a higher prevalence of cataract (41.89%) was reported in a study from rural Allahabad, UP, India [14]. India's National Program for Prevention and Control of Blindness and Visual Impairment (NPCBVI) has been instrumental in reducing the backlog of blindness due to cataract but continued presence of cataract blindness in rural areas highlights the need for continued efforts to reach out to the rural population and

make surgical intervention feasible and accessible to them. Among the patients with refractive error in our study, 52.2% were aged less than 40 years. This is expected because myopia accounts for majority of refractive errors in this age group which starts in childhood and usually progresses till around 20 years of age [15]. A high proportion of refractive error highlights the need for further strengthening the school vision screening program and distribution of corrective glasses.

In our study presbyopia accounted for 21.6% of the disease burden which is similar to reports by Kimani *et al* [16] and Courtright *et al* [15]. Of the total patients with presbyopia, 27.2% were females and only 18.4% were males. Rural females are often concerned about near vision because they do fine vision activities at home such as knitting and sewing. In our study, non-visual ocular pathologies towards ocular morbidities mainly conjunctivitis and pterygium was around 10%. These conditions need healthy practices with regards to ocular health for their prevention and control and thus provision for health education and behaviour change communication should be included in national programs [17-19].

In this study we have documented pattern of ocular morbidities from an eye clinic in a rural area. A high proportion of cataract patients in the OPD might reflect lack of affordable and accessible operation services in rural areas. Thus, there is need for further scale up of operative services to cover the yet unreached rural population. Similarly, higher prevalence of refractive errors and presbyopia underscores the need for strengthening vision screening services and provision of providing corrective glasses. Therefore, findings from the study could be utilised to plan improved eye care services in usually underserved rural areas leading to improvement in eye health of rural residents.

#### Conflicting Interest

None

#### Fund

Nil

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